Restructuring Options for Urban Public Transport in India

Final Report

Prepared for **The Department of Transport, Land, and the Regions, UK**

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This report is the culmination of ten months of participatory research on a collaborative project between the Tata Energy Research Institute (TERI) and the Association of State Road Transport Undertakings (ASRTU) that sought to provide a framework for restructuring the urban public transport sector in India so as to augment the supply and improve service quality. Since the approach to the project was to develop case studies of urban public operators to understand the institutional and policy constraints in the public transport sector, this project would not have been possible without the active support and co-operation of the stakeholders from public transport sector in the selected cities, namely Delhi and Bangalore. Finally, we would also like to acknowledge the inputs provided by a number of sector experts. A list of some of the people who spared some of their valuable time for discussions with the project team is given in Annex B.

Thanks are also due to Ms S Nithya for secretarial assistance.

Abbreviations

AMTS	Ahmedabad Metropolitan Transport Services
APSRTC	Andhra Pradesh State Road Transport Corporation
ASRTU	Association of State Road Transport Undertakings
BEST	Brihan-Mumbai Electric Supply and Transport Undertaking
BMTC	Bangalore Metropolitan Transport Corporation
BTS	Bangalore Transport Services
C&AG	Comptroller and Auditor General
CERC	Central Electricity Regulatory Commission
CHNTU	Chandigarh Transport Undertaking
CNG	Compressed Natural Gas
CSRTU	Calcutta State Road Transport Undertaking
DCB	Delhi Cantonment Board
DTC	Delhi Transport Corporation
KMTU	Kolhapur Municipal Transport Undertaking
KSRTC	Karnataka State Road Transport Corporation
MCD	Municipal Corporation of Delhi
MSRTC	Mysore State Road Transport Corporation
NDMC	New Delhi Municipal Council
NH	National Highway
OERC	Orissa Electricity Regulatory Commission
PCMT	Pimpri Chinchwad Municipal Transport
PMT	Pune Municipal Transport
PO	Private Operator
RTA	Regional Transport Authority
SMTU	Solapur Municipal Transport Undertaking
SPVs	Special Purpose Vehicles
SRTUs	State Road Transport Undertakings
STA	State Transport Authority
TMTU	Thane Municipal Transport Undertaking
TRAI	Telecom Regulatory Authority of India
VRS	Voluntary Retirement Scheme

Executive summary

Transportation in the urban context assumes great significance as the productive efficiency of urban agglomerations will be maintained only if mobility requirements in the cities are fully met. However, this productive efficiency in urban India is now threatened due to the increasing number of vehicles. It is important that the existing transportation infrastructure is utilised optimally through meeting mobility needs efficiently through a greater modal share of public transport. However, unless the quality of public transport services improves substantially, the trend of increasing preference for personal vehicles would continue. Hence, it is extremely important that the provision of public transport services be restructured to ensure service delivery that matches consumers' expectations. Improving quality of services from public transport would require restructuring of the State Road Transport Corporations so that the policy, planning and regulatory functions are carried out by an entity different than the one involved in direct operations. There would also be a need for a regulatory framework that would oversee all modes of public transport particularly urban and suburban railways.

Unbundling operations

Public transport operators in India provide public transport services, using both their own fleet and by leasing buses from private operators under the Kilometre scheme. Apart from operating these bus services, SRTUs also maintain infrastructure to repair and maintain buses. Finally they also own land for the purposes of parking buses (at depots) and passenger terminals for providing traffic interchanges.

Given the three distinct activities being performed by urban SRTUs in India, it is recommend that these activities be unbundled into separate profit centres. Such a separation is also expected to reflect the efficiency of delivery of these services and help in identifying areas of concern. This would ensure that each of these focuses on its core activity without being encumbered with the activities of other wings.

City bus operations

Greater private sector participation in public bus operations is recommended in urban India. However, private participation in the public transport sector would have to be preceded by an efficient regulatory framework. Since, using its own buses puts a tremendous strain on public funds and public budgets are no longer in a position to finance such capital investments, the STRU should save on capital investments by adopting the kilometre scheme and not augmenting their bus fleets. Over time the SRTUs should phase out their own bus services by not replenishing fleet and substituting its services by contracted services. With a gradual growth in the private sector operations, it would be possible for the government to withdraw from operation of public buses completely and only regulate the sector.

Depot and terminals

The ownership and management of the depots, terminals and bus stations is a natural monopoly and it would be inefficient for a multiplicity of operators to own and manage these infrastructure facilities. Nevertheless, unbundling this activity from bus operations by setting up of a separate corporation would be necessary for it to function as a separate profit centre. This corporation should enter into contracts with any operator to allow parking within its premises at an appropriate fee. This corporation could also lease out some space for such repair facilities either to the workshop company or even to a private workshop. Finally, this company could also earn substantial revenues through property development and advertising.

However, it is important to recognise that commercial development of the properties allocated to this company could be more remunerative than provision of parking facilities for buses, or interchanges for passengers. Hence, it is recommend that though the company should operate only on commercial considerations, for commercial development of its properties it should need the approval of appropriate regulatory agencies in this sector such as the STA or any other independent regulator.

Repairs and maintenance workshops

Management of the workshops and repair facilities is again not a natural monopoly; there are several private workshops at which repairs could be carried out and there is no need for public funds to be spent on these facilities. However, given the fact that substantial infrastructure for repairs already exists with SRTUs, this may be used for the repairs and maintenance of all buses and other motor vehicles. As a supplemental source of income, it could be declared as an Authorised Testing Station to issue Certificates of Fitness as per the requirements of Section 56 of the Motor Vehicle Act, 1988.

Regulating public transport services

The restructuring of SRTUs would help improve their financial performance. The induction of the private sector into the operation of buses would enable improved performance and make available additional capacity. However, to bring about the required improvements and attract private investments in public transport, restructuring of the regulatory oversight in the sector would also be necessary.

Thus, the setting up of an independent regulator for the public transport sector in India is recommended. Also, it is recommended that the concerned governments enact the legislation instituting the regulatory authority. The segments of the public transport system such as operation of buses and rail systems, and management of deport and terminals, which have monopoly characteristics, should be subject to regulatory jurisdiction. The proposed activities of the regulator are the following.

- Fixation of fares and fees
- Route and network design
- Route allocation and issue of permits
- Specification, monitoring and enforcement of quality of service standards
- Co–ordination
- Data collection and management
- Dispute resolution
- Make recommendations to government on policy matters

Since, it may take some time to get the requisite legislation passed, the existing regulators in the sector should be strengthened with an explicit commitment by the concerned government to establish an independent regulator at the earliest.

Principles for rational tariff design

Tariff determination is the primary tool available for creating an enabling environment for dynamic and sustainable growth in the transport sector. The fundamental principle of tariff determination is to ensure that prices lead to an optimum level of investment, operation and demand in the sector.

While the following provide guidelines on tariff setting, it should be recognised that there may be a conflict between the different objectives that are sought to be achieved. For instance, increasing the share of public transport and issues of social sustainability would require that the fares be kept sufficiently low, while efficiency improvement s and viability issues may require periodic fare increases. Thus, it is important for the regulatory agencies in this sector to balance these objectives so as to achieve a sustainable outcome. Similarly, to ensure that the overall objective of increasing the share of public transport meeting the travel demand is met so as to achieve environmental and social sustainability, it may be necessary to subsidise public transport operators.

Demand for public transport services

Increases in bus fares could lead to loss in ridership to private modes. Thus bus fares would have to be benchmarked on the cost of alternative modes of transport to ensure that the modal shift is checked. Similarly, buses are considered to have a pro poor image in the sense that the economically challenged sections of the society are a captive market for the public transport operators. Hence, to address issues of social sustainability, it is imperative that the fares be kept sufficiently low to cater to such commuters.

Efficiency improvements to reduce costs

Tariffs should provide incentives for efficiency improvements so as to reduce costs of operation. It is also imperative that external costs such as congestion and pollution should be incorporated in the fare determination process so as to reflect the true economic value of the service delivered.

Subsidy administration

The need for subsidy should be assessed rather than just assuming that it exists, because the inclusion of unintended beneficiaries reduces the efficiency of the subsidy and increases the burden on the taxpayer. Wherever the government desires that a particular class of consumers be provided public transport services at subsidised fares, it is recommended that the allocation for the same should be made explicitly by the exchequer.

Fare revisions

Fare revisions should be rationalised and made systematic for a number of reasons. Such a mechanism should be reasonable, transparent and accepted by both the passengers and operators.

Quality of service parameters

Improvements in efficiency of public transport operations in urban agglomerations in India so as to check the increase in the share of private modes requires increase in the convenience and perceived personal benefits from both the modes of travel. Some of the key parameters in measuring quality are listed below.

- Punctuality and reliability
- Access
- Safety and comfort

Measuring service quality would also imply obtaining details relating to issues such as trips scheduled and operated, safety and crime record, park and ride facilities, route lengths and timetable, etc.

Route rationalisation and route allocation

It is necessary for a public agency to ensure that there is adequate coverage of public transport. At present, there is no systematic exercise for network and route design. Also, urban rail networks develop independently of the bus networks. It is necessary that a periodic assessment of the demand be made, on a scientific basis, over the entire network. This assessment should form the basis for allocation of routes amongst operators and a design of the level of service required.

Also, the present system of allocating routes amongst operators is not scientific and transparent. It is necessary that such an apriori assessment is made at periodic intervals, in a scientific manner, and route permits be given only after such an assessment has been made. Such an allocation needs to be done in a fair and equitable manner, not only to ensure adequate coverage on each route but also to ensure a reasonable return to each operator.

Need for an urban transport policy

The goal of an efficient transport system must be linked with goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents of different socio-economic groups. The pursuit of these goals simultaneously would call for strategies to bring about the desired changes in a time-bound manner based on a priority list of issues for action in short, medium, and long term perspective. A state of the art review suggests that the important institutions responsible for developing transport policies, planning and their implementation at the city level in developing countries need to agree to a package of measures by means of which goals of sustainable mobility are achieved. All this however must form a part of an integrated effort to provide an efficient and environmentally sound transport system for urban India.

1

Introduction

Till the mid 1980s public bus services in India were largely operated and managed by State owned Road Transport Corporations. These Corporations were plagued by severe financial constraints and were hard pressed to even meet the fleet replenishment needs, let alone meet the augmentation needs to cater to the growing travel demand. Since 1990s with rising income levels and greater affordability of personal vehicles, the monopoly status, hitherto enjoyed by public transport, has been diminishing. Unless the quality of public transport services improves substantially, the trend of increasing preference for personal vehicles would continue. This calls for a complete change in the mindset of the operators. It also calls for a greater sensitivity to consumer needs in network design, route planning, scheduling and actual operations, emphasis on comfort, travel time and accessibility, and scientific traffic planning based on reliable and regularly collected and updated database.

Given the above situation, it is extremely important that the provision of public transport services be restructured to ensure service delivery that matches consumers' expectations. One way of doing so could be promoting the induction of the private sector in a more organised and meaningful manner. Improving quality of services from public transport would require restructuring of the State Road Transport Corporations so that the policy, planning and regulatory functions are carried out by an entity different than the one involved in direct operations. There would also be a need for a regulatory framework that would oversee all modes of public transport particularly urban and suburban railways.

Scope and objective

In light of the above discussion, the study objective of the study was to redefine the role of the existing State Road Transport Corporations towards ensuring their financial viability and identify options for introducing private sector participation. This was identified to be key to augmenting the public transport fleet and improving service quality so as to increase the share of public transport in cities. The study also examined the benefits from and feasibility of setting up an independent regulatory body to oversee and assist the restructuring process. Legislative and administrative changes necessary to facilitate the recommended institutional restructuring have also been suggested in the report. Some of the specific issues sought to be addressed in the report are listed in Annex 1.1.

Methodology

The methodology followed in the project was a combination of literature surveys, interaction with experts, and discussions with agencies and organisations in this area, and the development of case studies.

Review of literature

Various policy documents, conference documents and proceedings, books, journals, and laws and regulations governing the sector were examined to identify reform issues and the constraints involved therein. Other related laws impacting the sector were also be examined in this regard such as those for municipal services.

Interactions with sector experts

A critical link was the establishment of dialogue with agencies having expertise in the specific service area. Interviews with such agencies and other stakeholders were carried out by the project team.

Developing case studies

In order to gain a deeper insight into the sectors, two cities were identified and detailed review of these cities was carried out to facilitate a better understanding of the organisational and community dynamics of provisioning of public transport services. Development of institutional arrangements, especially relationships between departments and agencies in the sector, were reviewed to identify any contextual lessons, and also any overlaps and gaps in responsibilities. The two cities selected were Delhi and Bangalore. Both have a similar urban form, have witnessed significant growth in personalised vehicles and both are (at present) entirely dependent on road transport to meet the urban public transport needs. Both are rapidly expanding and likely to have rail transit systems in the future.

Brainstorming sessions

For ensuring the proposed changes are practical and acceptable, the draft framework was put up for discussion with policy makers and stakeholders to elicit comments in various stages of the project. The comments and suggestions were then incorporated before the final recommendations are made.

Structure of the report

The second chapter provides an overview of the urban transport sector in India, with particular reference to the public transport sector, and the two cities under consideration. The chapter also identifies the concerns regarding the functioning of the public transportation sector in the cities. Chapter 3 analyses lessons drawn from the international experience in the privatisation and regulation of the urban public transport sector. The enabling institutional restructuring, to facilitate investment and to promote efficiency in the sector, is presented in Chapter 4. Chapter 5 elaborates the need for a regulatory framework and the issues involved in the design of a regulatory authority. It details the regulatory functions and the need for regulatory independence, apart from delineating the powers of the regulator. Chapter 6 lays down the principles for tariff determination. Quality issues in public transport are discussed in Chapter 7. Chapter 8 suggests models for route rationalisation and network design. Finally, Chapter 9 identifies other issues of concerns in the urban transport sector that need to be addressed in addition to public transport restructuring.

Annex 1.1 Issues addressed in the project

The project seeks to address the following issues.

Restructuring, private participation and regulatory arrangements

- What are the various restructuring models adopted in similar situations around the world?
- Which is the most appropriate model that can be adopted for Delhi and Bangalore? To what extent is it replicable for the rest of the country?
- What institutional, administrative, and regulatory changes need to be brought about to facilitate restructuring?
- What legislative changes would be necessary?
- What would be an appropriate time frame for the restructuring exercise to be completed?
- What are the pros and cons of each private sector participation model in operation of services?
- What the various models for privatisation models for support services such as maintenance of depots and terminals, etc?
- How would the universal service obligation be addressed in a privatised environment?
- What kind of regulatory oversight would be required in a liberalised environment?
- Who should design the route network (or be responsible for having the designs prepared)? Should a government agency do this or should this be contracted to a private agency?
- Who should allocate routes amongst bus operators? Should this be done by a government agency or an independent body outside the government?
- What institutional, administrative and legislative arrangements would be necessary monitor the quality of service norms?
- Which agency should be responsible for data collection and management?

Co-ordination functions

- Is there a multiplicity of agencies? The reasons for this and the consequences of this?
- What are the co-ordination activities that need to be carried out?
- What are the agencies that would be involved?
- What are the merits and demerits of a statutory agency carrying out such co-ordination vis-à-vis an informal arrangement set up through an executive order?

- Should the co-ordination mechanism be independent of the Government or be a part of the government system?

Dispute resolution

- What would be the best machinery for dispute resolution?
- What systems exist elsewhere and which of them can be replicated in India?
- What legislative changes, if any, would be required to have dispute resolution machinery outside of the normal judicial process?

Fixation of fares and fees

- How should be the principles for determination of tariffs for public transport?
- What should be the principles for periodic revision of tariffs?
- Who should determine these tariffs?
- What should be the skill requirements for such activities?
- What should be the principles for integration of fares between different modes?
- What are the various models used internationally?
- How should the tariff be linked to the cost of inputs?

Route and network design

- What parameters should be taken into account for designing route networks?
- What is the international experience in route network design, the institutional arrangements, parameters taken into account
- How often should this be done?
- What skills would be required for such an exercise?
- How should this information be disseminated for public knowledge and research purposes?
- How are routes designed in Indian cities? What are their shortcomings?

Route allocation and issue of permits

- What should be the criteria for route allocation to bus operators?

Specification, monitoring and enforcement of the quality of service standards

- Which parameters should be monitored for determining quality of service and specifying standards for quality of service?

- What should be the methodology for defining the quality of service norms?
- How should the quality of service norms be monitored and enforced? Who should monitor and enforce the quality of service norms?
- How should a citizen's charter on quality of service be drafted?
- What features of should be provided in a modern bus across different grades of service?
- What steps need to be taken to introduce modern facilities and buses in India?

Data collection and management

- What kind of data needs to be collected and maintained?
- How should the data be collected and managed?
- How should universal access to the database be ensured?

Viability of public transport

- Why have urban public bus fleets been unviable?
- To what extent can losses be reduce through efficiency improvements?
- Should Government subsidise public transport? If yes, how?

2

Overview of the public transport sector

Transport plays a significant role in the overall development of a nation's economy. This is particularly true in the urban context where cities are considered vertices of economic growth in a nation. However, concerns are being voiced on the sustainability of the development in the transport sector. This sector accounts for a substantial and growing proportion of air pollution in cities. The sector contributes significantly to the emissions of greenhouse gases and is also a major consumer of petroleum fuels. Rapid urban development also puts great pressures on all city functions, among these the transportation system, which is of vital importance for economic efficiency as well as for social sustainability. They key component of the urban transport sector is the public transport sector. This chapter outlines the issues and concerns in the public transport sector and outlines the need for reforms.

Transport sector in India

India has witnessed a rapid growth in the number of total vehicles registered in the last decade, which are about 41 million in number as on 31st March 1998 (Table 2.1).

Table 2.1 Growth of vehicles in India

Year	No of vehicles (thousands)	Two wheelers	Car, jeep, taxi	Buses	Good vehicles	Others
1951	306	8.82%	51.96%	11.11%	26.80%	1.31%
1961	665	13.23%	46.62%	8.57%	25.26%	6.32%
1971	1865	30.88%	36.57%	5.04%	18.39%	9.12%
1981	5391	48.56%	21.52%	3.01%	10.28%	16.64%
1986	10577	59.04%	16.83%	2.15%	8.16%	13.82%
1991	21374	66.44%	13.82%	1.55%	6.34%	11.85%
1996	33783	68.83%	12.44%	1.33%	6.01%	11.39%
1997	37231	69.01%	12.52%	1.31%	6.07%	11.09%
1998	40,939	69.23%	12.35%	1.31%	6.18%	10.94%

Source. MoST 2000

Along with the rise in vehicle population, the increased mobility demand is reflected in rising utilisation rates of personal vehicles. The problem has been accentuated by the gradual reduction in the share of public transport in India. This is reflected in the declining share of buses in the total vehicle fleet in the country, where the proportion of buses registered has declined from over 11% in 1951 to just over 1% in 1998. The decline in the penetration of public transport has led to a greater dependence on personal modes of transport, which are more energy intensive, occupy more road space, and have higher level of emissions per passenger kilometre travelled.

The rapid increase in the number of motor vehicles in India calls for urgent measures to deal with the resultant congestion and pollution. An effective method of resolving this problem would be to encourage greater use of public transport instead of personal vehicles and thereby reverse the trend of increasing shift towards the use of personal vehicles.

Overview of the urban public transport in India

Public transport in India can be classified into two – rail and road. Out of total passenger movement of the country, 80% is met by road transport while the remaining 20% is carried by railways at present.

Road transport

Road transport in India is operated partly by public sector and largely by private sector comprising about 28.7 % and 71.3 % respectively of the total buses. The participation of the state in road transport commenced in 1950 and since then State Road Transport Undertakings have been formed in every state.
At present, there are about 67 State Road Transport Undertakings (SRTUs) in the country engaged in rendering the most essential transport service to the travelling public in hilly, rural and urban area. These corporations, on an average, are operating a fleet of over 115 000 buses employing more than a quarter of a million people as on 31 March 1999. Out of 59 corporations, 14 corporations are operating exclusively in the urban areas and the remaining 45 in the mofussil[1] areas also (including 9 corporations, which are operating in hilly regions) (Table 2.2). Further, out of the corporations which are operating in mofussil areas, about 8 corporations are operating in only rural areas (including the hilly regions) and the remaining are operating in both the rural and urban areas. Out of the total number of buses held by the corporations, 17 455 are

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[1] The area outside the city is called Mofussil.

rendering service in urban area and the remaining 95 310 are functioning in mofussil area (including 2659 in hilly regions) (Source. ASRTU 2000).

Table 2.2 State Road Transport Undertakings in India

Number	Rural	Urban	Rural and urban
SRTUs	8	14	37
Buses	115424	17455	

Source. ASRTU 2000

The number of public bus transport undertakings having more than 1000 bus fleet as on 31 March 1999 is 27, the largest among them are the Andhra Pradesh State Road transport corporation and the Maharashtra State Road Transport Corporation with a fleet of about 19000 buses each. The organisational form for public sector bus transportation varies from state to state, the most common form being that of a Corporation constituted under the provisions of the Road Transport Corporation Act, 1950. There are 22 such corporations. While 26 undertakings have been formed under Indian Companies Act, 1956, public transport is also operated by 11 Municipal Councils under various municipal legislations. The remaining 8 undertakings function as part of government departments (Figure 2.1).

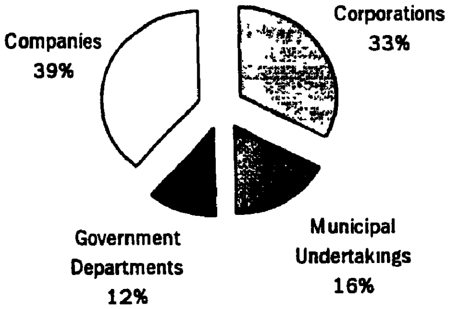

Figure 2.1 Management of State Road Transport Undertakings in India

Source. ASRTU 2000

Operational performance

As mentioned earlier, the total urban SRTU fleet was 17 455 in 1999. Out of this, 13 463 buses were operated by 14 SRTUs operating exclusively in urban areas. This section describes the change in operational performance of these urban public transport operators in India. Detailed operational and financial performance of these SRTUs is presented in Annex 2.1.

The total strength of the urban SRTUs grew from just about ten thousand in 1991 to about 13 500 in 1999, an increase of 28%. However, while the total vehicle fleet strength grew at almost 10% per annum in the 1990s (Table 2.1), the urban SRTU fleet grew by less than 3% per annum (Figure 2.2). Given that the increase in the bus fleet over this period has also not been spectacular (Table 2.1), the size and spread of public transport has seen a decline in the last five years.

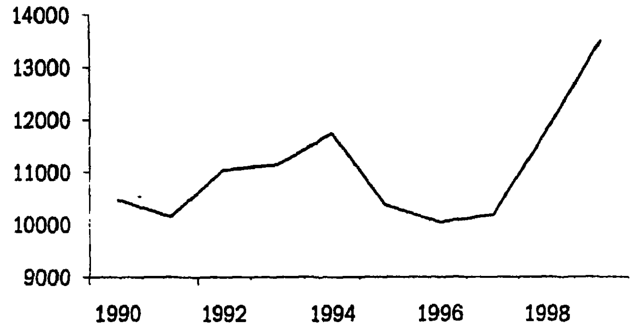

Figure 2.2 Growth in fleet strength of SRTUs in urban India
Source ASRTU 2000

The operational characteristics on the other hand do not show any distinctive trend (Figure 2.3). While the kilometres operated daily by each bus have shown a steady increase, the proportion of the total fleet on road has been declining.

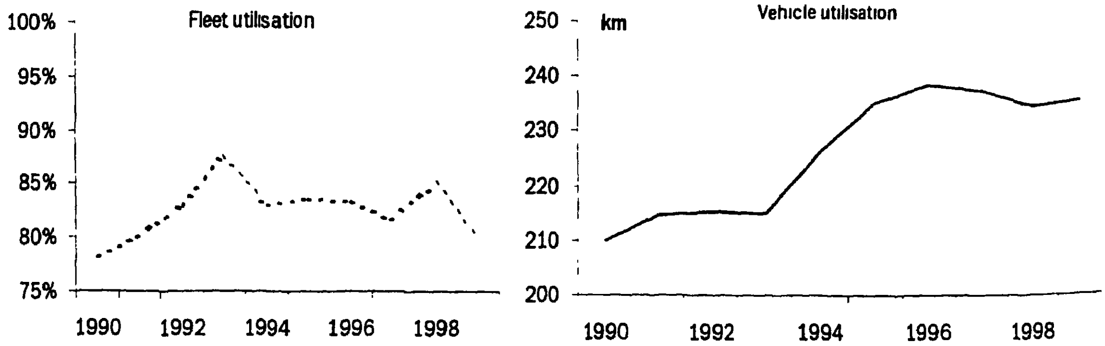

Figure 2.3 Operational performance of SRTUs in urban India
Source ASRTU 2000

Financial performance

Public passenger road transport in India is funded through its internal resources, market borrowings and equity capital provided by the Central and State governments. The overall financial performance of urban SRTUs in India appears to be gloomy and they are heading towards a severe financial crisis in the very near future. These corporations have incurred an accumulated loss of about 13 billion rupees by March 1999 which is nearly as large as of 14.60 billion rupees, the aggregate amount of equity of both the Union Government and the State Governments and reserves. Further, this accumulated larger than the total assets of the SRTUs.

As earnings per kilometre have grown slower than costs per kilometre, losses per kilometre have grown by nearly 7% per annum (Figure 2.4). Such a situation has arisen because of continuing inefficiency in operations and uneconomical operations to meet the universal service obligation. Also, the motor vehicle taxation regime is such that it taxes buses more than personal vehicles resulting in higher cost of operation for public transport. Some of these issues are discussed in greater detail in Chapter 6.

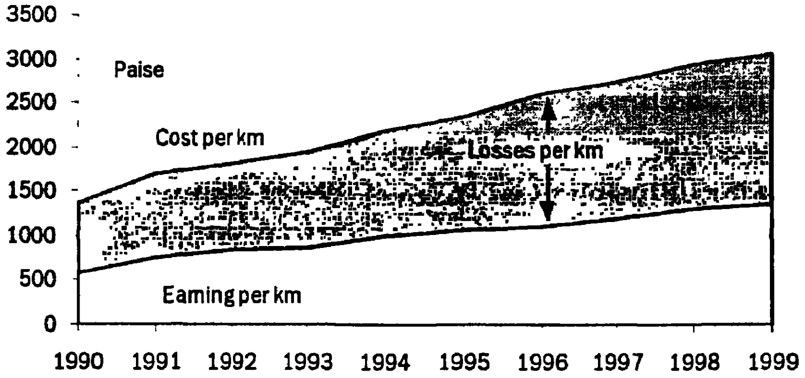

Figure 2.4 SRTU's financial performance (Rupees per kilometre)

Source ASRTU 2000

A result of the continuing losses has been the inability to generate adequate funds for capital expenditure and replacement of rolling stock. There exists a vicious circle of continuous losses leading into inadequate funds for capital expenditure and poor management of the fleet, which in turn leads to poor operational performance, causing even higher losses. There is thus a need to review their current operations to identify areas for reform.

In respect of bus transport operations in private sector, they are conducted mainly by private individuals or smaller companies, which are very scarcely distributed and perform independently. The private sector passenger transport is thus largely disorganised resulting in fierce and unhealthy competition with the public sector undertakings in the country. These operations are common in larger cities where there is a large daily commuting population. However, there is no data on private operations in public transport. Thus information such as the number of buses and bus days operated and passengers carried are not available from private sector. Some estimates put the number of private operated buses at 0.3 million across the country. Hence, there is an urgent need to elicit basic operational details from private operators. This issue is discussed in greater detail in Chapter 7.

Indian Railways

Indian Railways have a vast network, the second largest in the world under a single management, with 62 759 route kilometres of track and employing 1.57 million people as on 31 March 2000. Indian Railways carry 12 million passengers daily. Indian Railways is grouped under 15 zones for smooth and efficient operations. The policy and regulatory decisions are taken by the Railway Board.

The mega cities in India like Mumbai, Chennai and Kolkata have a large suburban network and this also forms part of the general railway operations of the respective zone. These suburban rail account for about 60% of the total railways passengers (Ministry of Railways 2000). Recently, a separate corporation has been formed to take care of the transportation needs of the Mumbai. Mumbai suburban rail is one of the biggest system in the world carrying nearly 2 billion passengers and operating 47 billion passenger kilometres annually. Mumbai suburban rail fares are, however, one of the lowest in the world and its yield per passenger kilometre fluctuates between 0.1–0.12 rupees.

As in other developing countries in the world, Indian Railways discharge social obligations through concessional fares for certain categories of passengers, mainly in the suburban areas of larger cities, operating uneconomic branch lines. The losses incurred under these heads amount to Rs. 18 billion in 1996/97, that is, about 8% of the total earnings of Indian Railways. No subsidy in any form is provided by the exchequer as is done in countries like UK, Switzerland, Germany and France where the magnitude of the subsidy ranges between 30% to 35% of the total revenue earnings of the railways.

Institutional and regulatory structure

In India, management of the urban areas is essentially a responsibility of the State Government, even though the 74th Constitutional Amendments devolve the responsibility of urban development to local bodies. Urban development, and therefore, urban transport, is primarily a responsibility of the State Governments in India, though some agencies that would play an important role in urban transport planning work under the Central Government with no accountability to the State Government, particularly Indian Railways. Table 2.3 lists some of the agencies involved with urban transport and indicates their specific responsibilities.

Table 2.3 Institutions involved with urban transport in India

Organisations	Functions	Relevant acts
Urban transport planning		
Ministry of Urban Development	Overall responsibility for urban transport policy and planning	
Land Development Authority, State Government	Land use allocation and planning	State Development Acts
Roads		
Transport Department, State Government	Licenses and controls all road vehicles, inspection of vehicles, fixing motor vehicle tax rates	Motor Vehicles Act 1988
Ministry of Surface Transport	Administer the Motor Vehicles Act and notify vehicle specifications as well as emission norms	Motor Vehicles Act 1988
State Transport Undertaking, State Government	Operation of bus services	Road Transport Corporations Act 1950
Public Works Department, State Government	Construction and repair of State roads	VII Schedule of the Indian Constitution (Article 246), List II (State List), Item 13
Local municipality	Construction and repair of smaller roads, road signage, traffic lights, licensing and control of non-motorised vehicles, clearing of encroachments and land use planning.	Constitution (Seventy-Fourth Amendment) Act, 1992
Police	Enforcement of traffic laws and prosecuting violators	State Police Acts
Railways		
Ministry of Railways	Own and operate urban rail transit systems wherever they exist	Railway Act, 1989
Others		
Ministry of Petroleum and Natural Gas	Regulation of prices and quality of transportation fuels	Essential Commodities Act, 1955 The Petroleum Rules, 1976
Department of Environment, State Government	Monitoring air quality	

Legislative framework

The two main enactments that regulate the functioning of public bus transport services are the Motor Vehicles Act, 1988 and the Road Transport Corporations Act, 1950. The Indian Railways Act, 1989 regulates rail transport. In addition, other legislations that have implications for the transport sector are the Tramways Act, 1950 and various municipal legislations.

Motor Vehicles Act, 1988

The Motor Vehicles Act provides for two types of road transport vehicles for the carriage of passengers, namely, stage carriages and contract carriages. A stage carriage is one where fares are charged on individual passengers either for the whole journey of for stages of the journey. On the other hand, a contract carriage is required to be engaged under a contract for the use of such a vehicle as a whole for the carriage of passengers mentioned therein. The fare or compensation payable for hiring of contract carriages has to be on a time basis or on a point to point basis. Contract carriages are not allowed to pick up or set down passengers en route.

Section 66 of the Motor Vehicles Act also requires that all such stage and contract carriages must have a permit. Permits are to be obtained from a Regional Transport Authority (RTA) or State Transport Authority (STA). In granting the stage carriage permit, the RTA/STA may attach to such a permit the following conditions.

- The area or route on which the stage carriage may be used
- The date from which the stage carriage may start operating
- The minimum and maximum number of daily trips to be provided on any route and on specified days
- That the time table as approved by the STA/RTA should be exhibited on the stage carriage
- Deviations from the time table within which it must be operated
- Restrictions on taking and setting down passengers at points other than specified points within a municipal area
- Maximum number of passengers and maximum weight of luggage that may be carried
- Free allowance for luggage and rate at which excess luggage is to charged
- Specifications with regard to the body of the vehicle
- Standards of comfort and cleanliness
- Conditions subject to which goods may be carried on stage carriages
- Fares that may be charged

- Specifications with regard to the tickets to be issued
- Conditions for carriage of mail
- Conditions under which the vehicle may be used as a contract carriage
- Arrangements to be made for the housing, maintenance and repair of the vehicle
- Use of and payment of fee for any specified bus station or shelter

Similarly, the following conditions may be attached to a permit for a contract carriage:

- Area or route on which the contract carriage may be used
- Restrictions on contracts outside the specified area
- Maximum number of passengers and weight of luggage that may be carried
- Conditions under which goods may be carried
- Specified maximum rates for hiring of such contract carriages
- Standards of comfort and cleanliness to be maintained

Section 67 (1) (i) permits the State Government to fix the fares for stage and contract carriages.

Sections 71 (3) (a) and 74 (3) (a) provides for the Central Government to impose limits on the total number of such stage and contract carriage permits that may be granted, having regard to the number of such vehicles, road conditions and other relevant matters. This provision is available only for urban areas with a population of more than 0.5 million.

Apart from the above, the Motor Vehicles Act regulates the registration of every vehicle and the grant of licenses to the personnel who would be operating such vehicles. Section 39 requires all motor vehicles to be registered. Further Section 56 requires all 'transport' (not personal) vehicles to carry a certificate of fitness, without which the registration is not valid.

Chapter VI of the Motor Vehicles Act offers special provisions for State Transport Corporations. If a State Government is of the opinion that for the purpose of providing an efficient, adequate, economical and properly co–ordinated road transport service, it is necessary that such services, in general or any particular class of such services be run and operated only by the SRTU and to the exclusion of any other operator, then the state government may implement such a scheme after it has formulated a proposal in this regard and given an opportunity to the interested people to file their objections, if any. The Act requires the objections to be heard and disposed off first.

Once such a scheme is finally notified, the SRTU may apply for permits as per the scheme and the required permits shall be granted by the STA. The STA may refuse to entertain applications for permits from others and even cancel or modify the terms of any existing permit. The Act provides for a compensation to be paid to any permit holder whose permit is cancelled or curtailed on account of a notified scheme coming into force.

Road Transport Corporations Act, 1950

The Road Transport Corporations Act, 1950 provides for the setting up of Road Transport Corporations by each State Government, having regard to:

- the advantages offered to the public, trade and industry by the development of road transport
- the desirability of co–ordinating any form of road transport with any other form of transport
- the desirability of extending and improving the facilities for road transport in any area and of providing an efficient and economical system of road transport service

The Act lays down the procedures for the management of the Corporation and prescribes the duties and functions of various functionaries of the Corporation. It also provides the procedures for appointment and removal of the top functionaries. It has been provided, under Section 18 of the Act, that the duty of the Corporation shall be to provide or secure or promote the provision of, an efficient, adequate, economical and properly co–ordinated system of road transport services in the State.

Indian Railways Act, 1989

Rail transport is governed by the provisions of the Railways Act, 1989. This Act, requires that no railway be opened for public carriage of goods and passengers until the Central Government has sanctioned the opening of the railway. Before sanctioning the opening of the railway, the Central Government is required to obtain a report from the Commissioner of Railway Safety as to the safety aspects of the railway system. Besides, Section 30 requires the Central Government to fix the rates for carriage of passengers and goods. Thus the Central Government has the responsibility to ensure safety of rail transport systems and also fix the fares on rail systems.

Indian Tramways Act, 1950

This act authorises the construction of tramway systems by local bodies or any persons with the authorisation of local bodies (Section 4). Thus, private operation of such systems is permitted under the law. The tramway systems defined in the legislation are distinct from railway systems. If the tramway system would lie within municipal limits, then the licensing authority would lie with the State Government. In other cases, the Central Government would regulate the licensing and functioning of tramway systems as with other railway systems under the Indian Railways Act, 1989. The license terms for tramways would prescribe the gauge for operation, the motive power to be used, the technical specifications of the system, the fares that can be charged, among other things (Section 7). The Act also provides for the license of the operator to be cancelled after three years if operations are found to be unsatisfactory (Section 17).

Municipal Acts - The Bombay Provincial Municipal Corporations Act, 1949

The Bombay Provincial Municipal Corporations Act, 1949, is valid in the States of Maharashtra and Gujarat. This Act permits the Municipal Corporations to create and operate public transport undertakings and operate in the manner permitted under the Motor Vehicles Act, 1988. Significantly, there is no provision in the legislation to permit local bodies to license private operators to run public transport services.

Transport sector in Delhi

Delhi is situated on the bank of the river Yamuna in Northern India. The population of the city was 13 million as on 1 April 1999 and is spread out over nearly 1500 square kilometres. It is situated between latitudes 28°24'17" and 28°53'00"N and longitudes 76°50'24" and 77°20'37"E at 216 metres above the sea level. It is divided into three administrative divisions, namely, MCD (Municipal Corporation of Delhi), NDMC (New Delhi Municipal Council), and DCB (Delhi Cantonment Board), with their share of covered area being 41%, 53%, and 3% respectively. In 1991, the average population density in Delhi was 6352 persons per square kilometre, with maximum population density being 16 833 in the area under the MCD, followed by 7050 in the NDMC, and 2197 in DCB.

Figure 2.5 depicts the transportation network in Delhi, which has a maximum east–west distance of 52 km and a north–south distance of 48.5 km.

As can be seen in Figure 2.5, Delhi is the confluence of no fewer than five national highways. Thus, apart from the goods and commodities coming in for local consumption, large quantities of freight move through Delhi in transit to other destinations.

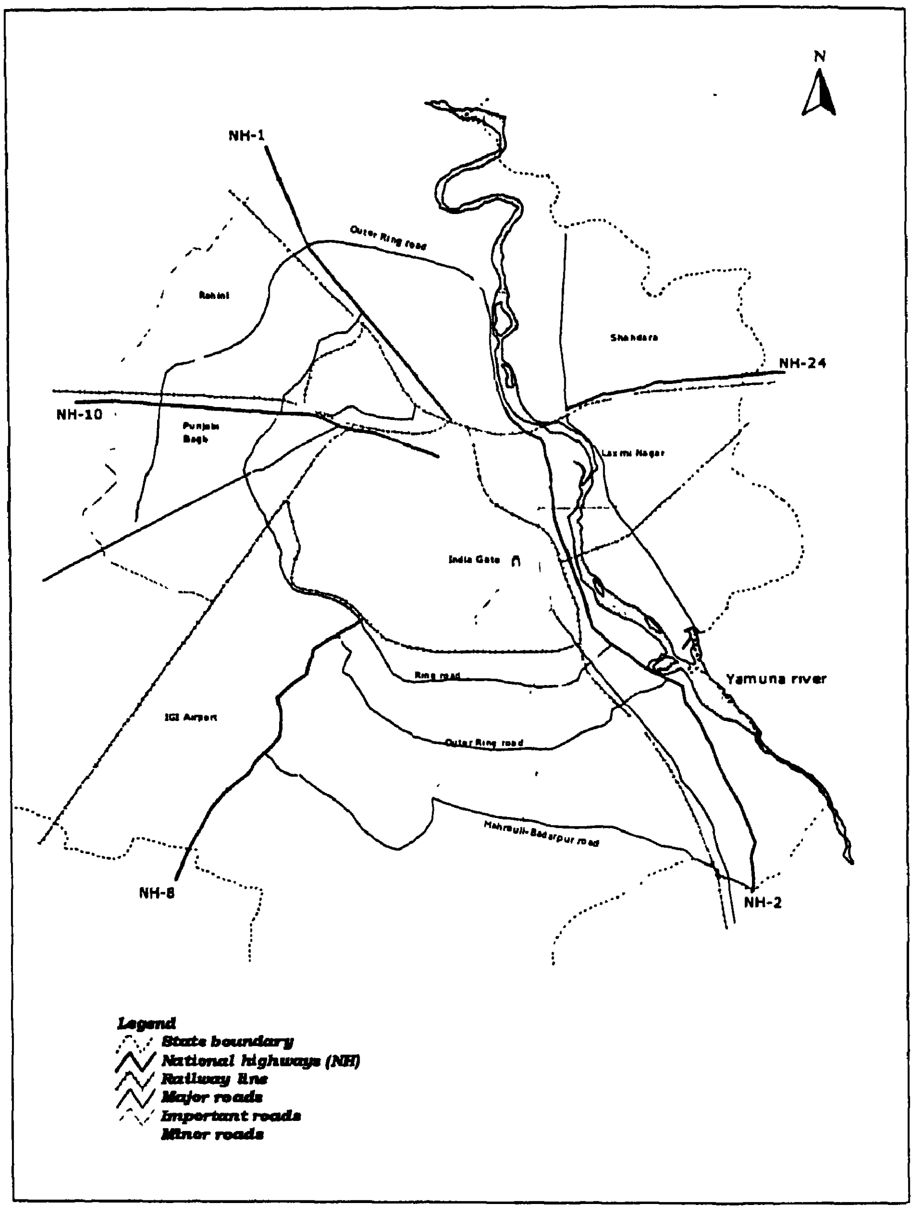

Figure 2.5 Transportation network in Delhi

Growth in travel demand

The passenger travel demand estimates for Delhi from TERI (2000) are presented in ten-yearly intervals (Table 2.4). The total passenger travel demand in the city is expected to increase more than two fold over the next 10 years (2000 – 2010). Table 2.4 also provides the changes in modal split – share of total passenger travel demand catered by different modes – over these years. In spite of an insignificant (1%) share of buses in the total fleet, buses in the city cater to a very high volume of travel demand and this trend is likely to continue. With the phasing out of 8-year old buses from 1 April 2000 (as per the Supreme Court directives), the share of travel demand to be catered to by buses is expected to decline from about 57% in 1990 to 50% in 2000 and then further to 48% in 2010.

Table 2.4 Estimation of travel demand: past, present, and future (Billion passenger kilometre)

Year ending 31 December	Two-wheelers	Cars/jeeps	Three wheelers	Taxis	Buses	MRTS	Total
1990	7.96	8.64	3.44	0.25	27.18	0.00	47.47
	(16.77)	(18.19)	(7.25)	(0.53)	(57.26)	(-)	(100)
2000	14.77	29.03	3.48	0.38	46.78	0.00	94.44
	(15.64)	(30.74)	(3.68)	(0.40)	(49.59)	(-)	(100)
2010	33.81	61.64	7.59	0.64	105.04	10.40	219.12
	(15.43)	(28.13)	(3.46)	(0.29)	(47.94)	(4.75)	(100)

Figures in parentheses indicate modal split in percentage.
Source. TERI 2000

Growth of motor vehicles and its composition

Delhi has recorded the largest registration of motor vehicles even though it ranks third in the list of mega cities of the country, after Mumbai and Calcutta. Since 1971, the growth of registered motor vehicles in Delhi has followed an exponential path (Table 2.5). As on 31 December 1998, total vehicles registered in the city was nearly 3.17 million. However, the ownership and other details of only 3.11 million vehicles are available with the Computer Centre of the Transport Department, Government of the National Capital Territory of Delhi and the Traffic Police Computer Centre. The difference (58 786) appears to be on account of phasing out of 15–year–old commercial vehicles after the Supreme Court judgement in 1998 (TERI 2000a).

Table 2.5 Growth of registered motor vehicles in Delhi

Year	2-wheelers	Cars/jeeps	Autorickshaws	Taxis	Buses	Goods	All vehicles
	%	%	%	%	%	%	Thousands
1971	51.7	31.3	5.7	2.1	1.7	7.5	180
1975	50.9	30.4	6.2	2.2	2.8	7.6	224
1980	64.1	22.5	3.8	1.2	1.5	6.9	521
1985	68.9	18.9	3.4	0.9	1.5	6.4	925
1990	67.5	21.7	3.5	0.6	1.1	5.6	1765
1995	66.3	24.0	3.0	0.5	1.1	5.1	2576
1998	65.6	25.4	2.7	0.5	1.1	4.7	3167
Compound average growth rate per year (%)							
1971-75	5.2	4.8	8.2	6.8	19.8	5.7	5.6
1975-80	24.0	11.5	7.4	4.8	5.1	16.0	18.4
1980-85	13.8	8.3	9.5	6.7	11.8	10.5	12.1
1985-90	13.3	17.0	14.6	3.0	6.2	11.0	13.8
1990-95	7.5	10.0	4.7	5.9	8.1	5.9	7.9
1995-98	6.7	9.2	2.9	9.4	9.0	4.1	7.1

Source: GNCTD 1999

One noticeable feature of the growth is that it has not been even across all categories — personal modes of transport (two–wheelers and cars/jeeps) have dominated the growth. The two–wheelers and cars/jeeps in Delhi account for more than 90% of the registered motor vehicles and the share has been increasing throughout the 1990s (Table 2.5). These personal modes catered to around 38% of the total passenger travel demand in the city during the same year (Bose 1998). On the other hand, as can be seen from Table 2.5, the share of registered buses – the primary mode of public transport in Delhi – is an insignificant 1%. Yet, buses met about 53% of total passenger travel demand in 1996 (TERI 2000a). Even the share of the intermediate mode of public transport (three–wheelers and taxis), that in 1985 accounted for 4.3% of all motor vehicles registered, had decreased to 3.2% by 1998. Thus, the shift towards personal mode of transport has been marked. This has made traffic management more difficult since availability of road space has not increased commensurately. This has led to congestion, in turn reducing vehicle speed and causing extra fuel consumption and pollution.

Current status of public transport in Delhi

Despite the high volumes of traffic, the public transportation system in Delhi is completely road based. Piecemeal and stray efforts have been periodically made to correct this anomaly. For instance, in 1982, during the Delhi Asiad Games, the Electrical Multiple Units (EMU) on the Ring Rail were operationalised. However functional problems like a poor approach to the terminals and lack of co-ordination for feeder services from road based public transport service providers resulted in it being an unqualified failure. Recently attempts have been made to reactivate the Ring Rail on an experimental basis during the Trade Fair 1998. A rail based Mass Rapid Transit System is being built but the first phase is likely to be commissioned only in 2005/6. Thus the enhancement of rail based intra-city transport is not feasible at least in the short run (RITES 1990) and public transport is likely to remain road based.

Currently public bus transport in Delhi is provided through a multiplicity of mechanisms. These include:

- DTC's own city services which are operated by the DTC, using its own fleet
- Kilometre Scheme of DTC under which, private buses are hired to run services as required by the DTC[2].
- Direct permits (Blueline) under which permits have been given directly by the STA (State Transport Authority) to private operators for operating on specified routes. The buses are owned and operated by the private permit holder who also collects the fares. The fares and routes are as allowed by the STA under the Motor Vehicles Act, 1988. They operate under the conditions of the permit granted to them. These buses have no relationship with the DTC and operate on their own.

The approximate break up of the public bus fleet is given in Table 2.6.

Table 2.6 Number of public buses in Delhi in October 2001

Services	Buses per day
DTC services (intra city only)	2565
Under Kilometre scheme	2739
Blueline services	3000[3]

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[2] The Kilometre Scheme has been discontinued in Delhi since May 2002 and all such buses have been given Stage Carriage permits.

[3] Based on the number of permits issued under the Redline scheme when it was introduced

In addition to the above, there are a large number of contract carriages that provide services during peak hours and also carry school children. Some contract carriage buses, commonly referred to as the Charted Bus services in Delhi, operate as ordinary stage carriage buses. Though such operations are illegal, these constitute a significant portion of the total travel demand. These operators fix their own fares and typically operate during peak hours and provide a peak hour service, and are very popular among office goers. However, as with most private operations in the public transport sector, there is very little information available on such operations.

Till the late 1980s public bus services were largely operated and managed by the Delhi Transport Corporation (DTC). In 1992, Delhi became one of the first cities in the country to open the road based public transport sector to the private sector. The origins of this action can be traced to a strike by the DTC union in the 1988, wherein the public transport authorities permitted private buses to operate under an 'earn and keep' scheme. Thereafter, these buses continued to operate in the city even when the strike was over. In view of mounting losses, a militant union, poor service quality, and the resulting public criticism, the monopoly of DTC in this sector was ended. This scheme was formalised as the Redline bus scheme in 1992, later christened as Blueline buses. Some of the key features of this scheme are listed below.

- A total of 3000 permits for running stage carriage (public buses) were issued
- Permits were issued only to individuals owning less than 5 buses
- Routes were allotted by a draw of lots based on preferences indicated by the applicants
- At the time of introduction of the scheme, 60% of the buses on each route were expected to be operated by DTC
- Private operators were required to pay a fee to DTC for the use of the passenger terminal facility. Interestingly, DTC was not required to provide parking facilities in its depots

The consequence of the policy of giving permits only to operators owning less than five buses resulted in an ownership pattern that was biased in favour of single bus operators (Figure 2.6).

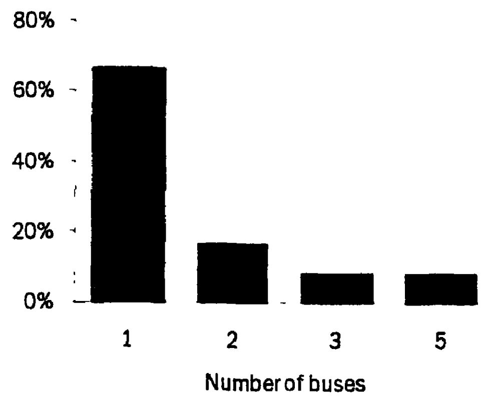

Figure 2.6 Ownership pattern of Redline buses

Source. Dhingra and Sawant 1998

The consequence of the above exercise has been widely criticised and extensively documented (Dhingra and Savant 1998) (Table 2.7). Even though the private operators outperformed DTC on almost all operational counts, the record of these 'bloodlines' on all social parameters like road safety and consumer satisfaction has been poor. The results of a survey presented in the Indian Journal of Transport Management show that 84.47% of the respondents ranked these Blueline buses as poor in the category of safety (Goel 2000). The main cause of this poor safety record is the competition over passengers. Private operators that run on the Blueline scheme of Delhi are especially known for racing to reach the next bus stop before the competition in order to capture more passengers and so reap a higher profit.

Table 2.7 Comparison between DTC and private operators

Parameter	Fleet Utilisation	Km Utilisation	Staff/Bus	Km/Litter	Passenger Comfort	Safety	Service Frequency
DTC	54.76%	245 km	9.56	3.75	100	100	100
Private Operator	93.0%	246 km	4.60	3.0	79	87	89

Source. Dhingra and Sawant 1998, DTC 2001

The poor social viability of this scheme has been ascribed to two factors. First, the predominance of single bus operators resulted in ineffective regulation of this sector, as monitoring the entire fleet was difficult. Secondly, the crew attributes were poor. Only 25% of the drivers were educated beyond high school with less than 10% high school pass–outs. Similarly, no conductor had previous experience of more than two years. Formal training of the crew was less than 15% on a whole. Moreover, instead of the mandatory two drivers, only one driver was employed to ply for all the 12–16 hours. This is where DTC had a distinct advantage in terms of a trained workforce.

On the other hand, the performance of the Kilometre scheme has been a success in Delhi. In the Kilometre Scheme, DTC collects the fares but the buses are provided and maintained by the private party. The private party is paid for each kilometre of operation, at a pre–agreed price. The private operator is assured of a minimum level of operation per day to assure him of minimum daily earnings. As discussed later, these operations are financially viable. Also, as these operations are a part of DTC operations and the private operator does not bear the revenue risks, quality of service norms have been adhered to.

Thus, it is clear that due to inadequate regulation, entry of the private sector in this key social sector has not been completely successful. There have been significant social and environmental costs of this exercise. In the meanwhile, the public transport sector in the city continues to suffer from poor service quality, reinforcing the shift to personal vehicles.

Performance of DTC over the years[4]

As may be seen from the above, one of the key roles in this sector is played by the state run Delhi Transport Corporation (DTC). DTC is a statutory corporation established under the Road Transport Corporations Act, 1950 as amended by the Delhi Road Transport Laws (Amendment) Act 1971. The Union Government took over the assets and liabilities in November 1971 from the erstwhile Delhi Transport Undertaking operated by the MCD. Subsequently DTC was transferred to the Government of National Capital Territory of Delhi in August 1996, after writing off all the loans from the Union Government.

DTC's fleet strength grew from just about 2200 in 1980 to about 4400 in 1991, an increase of 100% in a decade. However, its fleet strength has been declined thereafter till 2000 (Figure 2.7). More significant was the increase in the number of routes (by a factor of over 3.5) in the period between 1980 and 1995. Subsequently, there has been a decline in the number of routes as well. Thus the size and spread of DTC, which steadily increased over the first decade of its operation, has seen a decline in the last five years. However, in the last one year, DTC has purchased over 1650 buses to increase its fleet in compliance with the Supreme Court directives (TERI 2000a).

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[4] This discussion on the entire DTC fleet includes interstate operations

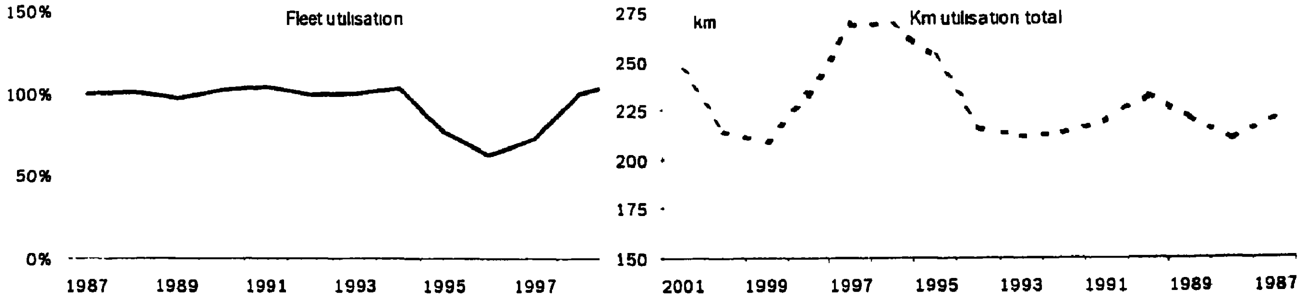

Figure 2.7 Growth in fleet strength and number of routes operated by DTC

Source DTC 1998 and 2001

DTC's operational characteristics on the other hand do not show any distinctive trend (Figure 2.8).

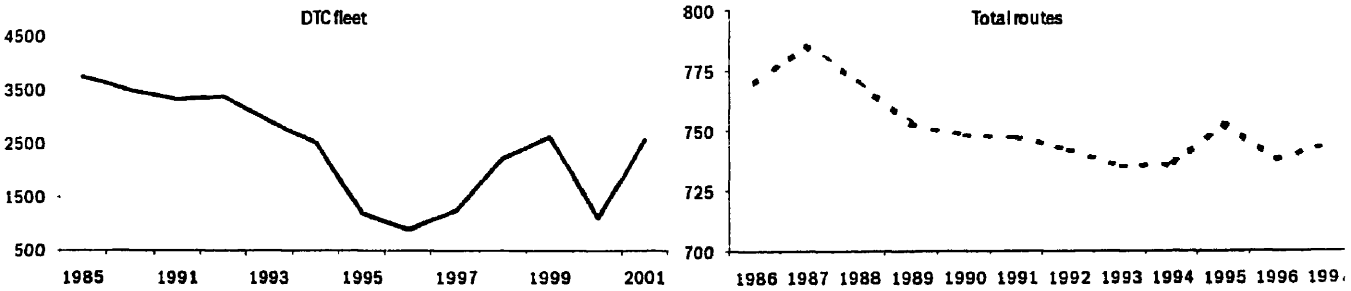

Figure 2.8 Operational performance of DTC

Source DTC 1998 and 2001

A drastic reduction in the fleet on road came about between 1994 and 1997 with the fleet utilisation falling dramatically from nearly 90% in 1991 to an average of 60% between 1994 and 1997. An improvement in fleet utilisation had resulted in the on road city fleet increasing in 1998 to 2231. The recent Supreme Court directive banning the plying of diesel buses older than eight years has resulted in the fleet strength dropping from over 2600 in May 1999 to about 1100 in May 2000 (Figure 2.9). However the fleet has increased again through the purchase of new CNG buses in compliance with the Supreme Court directives.

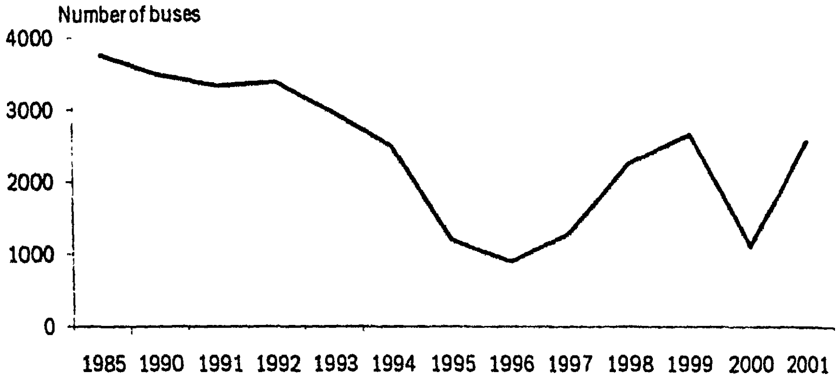

Figure 2.9 DTC city bus fleet

Source. DTC 1998 and 2001

In terms of DTC's financial position, total expenditure increased over 4.5 times in the last decade and a half, while the increase in revenue has been only 3.5 times. The result has been an accumulated loss of 8.5 billion rupees in 1998/99 (Figure 2.10).

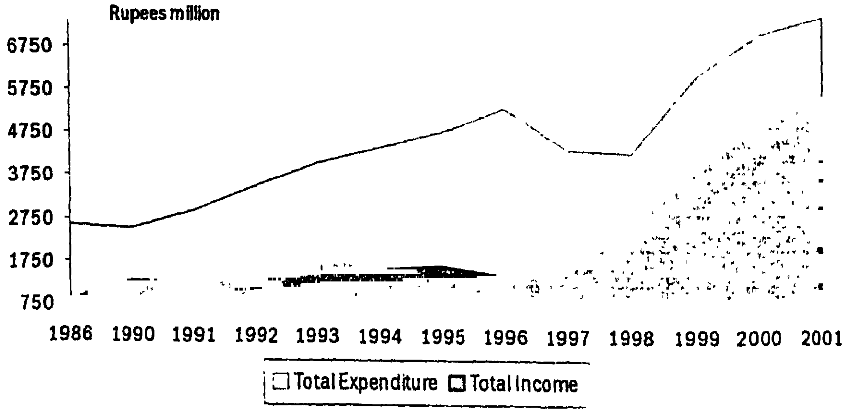

Figure 2.10 DTC's financial performance (Rupees million)

Source DTC October 2001

The mounting losses of DTC imply a substantial commitment from the state government for the provision of public transportation services in the city. Incidentally, this is in addition to the over 21 billion rupees waived off by the Union Government when the corporation was transferred to the state government (Figure 2.11).

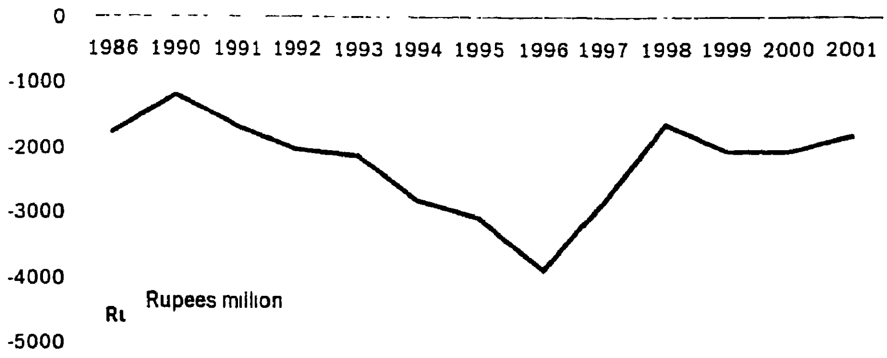

Figure 2.11 DTC losses since 1986

Source DTC 1998 and 2001

A majority of the increase in losses is due to increase in labour costs. While variable material costs increased less than 200% between 1986 and 2000, and fixed costs remained virtually unchanged, labour costs increased by nearly 4 times. Till 1997, large interest payments on government loans implied that the fixed costs were a significant proportion of the total costs. However, since 1998, this component has been written off resulting in the share of fixed costs coming down substantially. This is also reflected in the rising share of labour costs in total expenditure, from just 30% of total costs in 1986 to over 50% in 2000 (Figure 2.12).

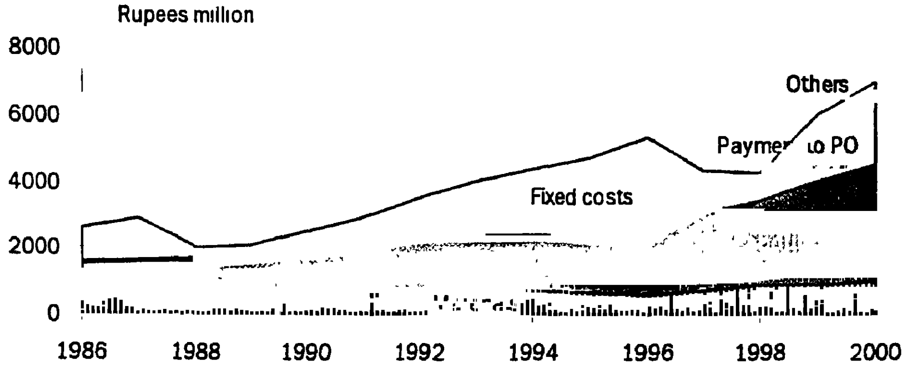

Figure 2.12 DTC's cost trends

Source. DTC 1998 and 2001

However, despite its mounting losses, DTC has shown considerable improvement in the last two years by reducing its operating expenditure considerably. This is in large measure due to the induction of new buses and the phasing out of old buses resulting in reduction in the variable expenditure (Figure 2.13). Also, the gradual move in DTC towards increasing its service coverage through leasing buses instead of augmenting its own fleet has resulted in reduction in operating costs.

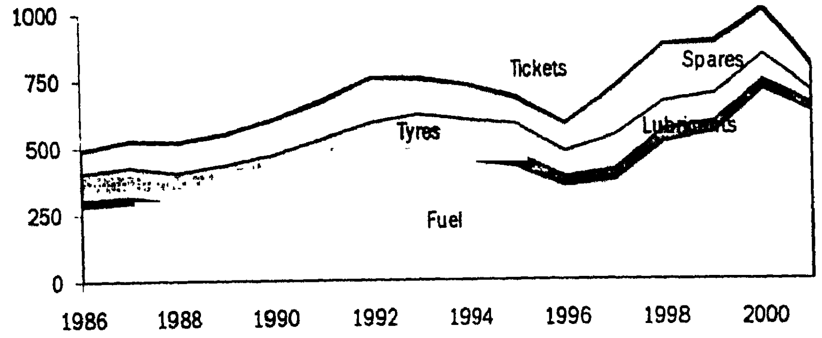

Figure 2.13 DTC's variable cost trends

Source. DTC 1998 and 2001

What is more interesting is the trend in traffic earnings from the city operations (Figure 2.14). While the proportion of this component of total revenue showed a increasing trend till the early nineties, this share has fallen to under 35% of total revenue in 2000 from over 78% in 1989 and 1990 coinciding with the decline in the fleet strength. Parallelly, the share of revenue from interstate operations has been rising. This implies that the decline in fleet strength of DTC after 1992 has resulted in a steady withdrawal of city services while the interstate operations were not impacted. An important component of the total revenue now is the income from privately operated buses (PO buses) operating under the Kilometre Scheme with DTC[5].

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[5] With the discontinuance of the Kilometre Scheme, this component of revenue has since bee lost

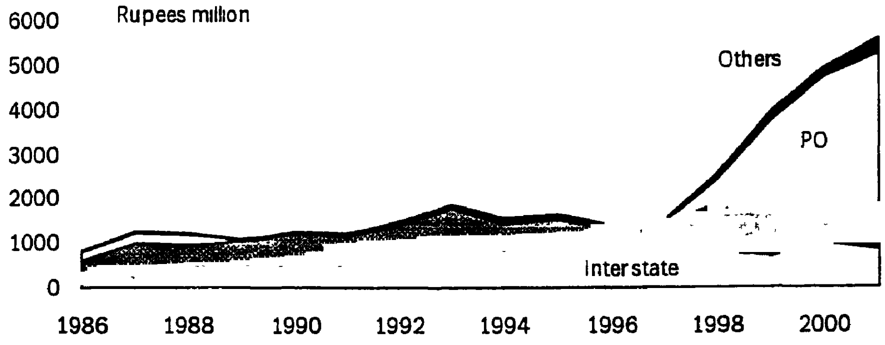

Figure 2.14 DTC's revenue trends

Source. DTC 1998 and 2001

The financial performance of its city, PO and inter–state operations (Table 2.8) shows that a major component of its losses comes from its city operations that use its own buses.

Table 2.8 Financial performance of DTC city and interstate operations in 1999/2000 (in Rupees million)

	City		Interstate
	DTC	KM Scheme	
Revenue	1526.33	1691.07	749.70
Costs	3001.67	2090.80	947.58
Loss	1475.34	399.73	197.87

Source DTC 2000

The PO scheme and inter–state services incur relatively lower losses. In fact, during the current year the PO scheme has made profits (Table 2.9).

Table 2.9 Financial performance of private operations under DTC (in Rupees million)

	1998	1999	2000	2001
Revenue	2.80	518.76	1682.18	2296.31
Costs	1.94	476.49	1552.52	1971.41
Profit	0.85	42.27	129.65	324.89

Source DTC 2000

A result of the continuing losses of DTC has been its inability to generate adequate funds for capital expenditure and replacement of rolling stock. In fact, the dramatic decline in fleet utilisation between 1994 and 1997, has been attributed to inadequate funds for repair and maintenance of the bus fleet resulting in nearly 40% of the fleet being grounded. This period also coincided with the highest losses ever made by DTC. Thus there exists a vicious circle of continuous losses leading into inadequate funds for capital expenditure and poor management of the fleet, which in turn leads to poor operational performance, causing even higher losses. The improved performance of DTC in the last two years has been the ascribed to an infusion of Rs 1.17 billion by the state government as contribution to the equity of DTC. However, the state government can not perpetually subsidise DTC operations. Thus there is a need to review DTC's current operations to identify areas for reform.

Resource mobilisation for fleet augmentation

DTC has not been able to generate any funds for fleet augmentation in the recent years. In the past also, any fleet augmentation was financed through capital grants from the plan fund. This has severely limited DTC's ability to provide public transit services in the city.

This issue is of immediate concern today as the Supreme Court has directed that there should be 10 thousand public buses running on CNG fuel in the city by April 2001. In response to this, DTC had prepared an ambitious plan of augmenting its fleet to 5000 buses by 2003/04. The details of this are provided in Table 2.9.

Table 2.10 DTC's action plan for fleet augmentation

		1999/2000	2000/01	2001/02	2002/03	2003/04
Diesel	New	0	345	0	0	0
	Existing	2422	1055	865	565	345
CNG	New	0	1796	839	1000	1020
	Existing	0	0	1796	2635	3635
Total		2422	3196	3500	4200	5000

Source DTC records.

The investment that is required to operationalise this plan has been estimated to be nearly 8 billion rupees (TERI 2000). Quite obviously, it will be difficult for a loss making venture like DTC to leverage funds of this volume. However, if DTC were to take the buses on lease from private operators, and operate these under the Kilometre scheme, then DTC could continue to meet its city public transit commitments without having to invest in building up a bus fleet. At the same time, private sector participation in the sector should be increased in a manner that is not dangerous as the Blueline bus scheme is. Thus an effective public private partnership should be developed in the sector. This thesis is developed in greater detail in the following chapters.

Transport sector in Bangalore

Karnataka is the eighth largest state in India in terms of both the area with 191 773 square kilometres and the population of 4.5 million persons according to 1991 Census accounting for 5.85 per cent of the total geographical area and 5.31 per cent of the total population in the country. The population density in the state is about 235 persons per square kilometre as against the country's average of about 267 persons per square kilometre according to 1991 Census figures. Out of the State's total population, about 30 per cent live urban area.

Bangalore district is located between latitude 12°58'N and longitude 77°35'E and at 916 meters above the mean sea level. It is situated at the centre of the south Indian peninsula, almost equidistant from both the eastern and western coasts. It is the capital city of the State of Karnataka. The district has expanded tremendously over the years. The Bangalore Metropolitan Area with a total population of 4.09 million in 1991 extends more than 1279 square km of which nearly 800 square km constitutes the green belt area. About 444 square km is called the Conurbation area. The Bangalore Metropolitan area includes the Bangalore district (urban and rural) and a part of the adjoining Kolar district.

The city has been divided into three sub–areas, the city corporation area, the outer conurbation area (Metropolitan Area excluding City Corporation Area), and the green belt. The major rivers passing through the Bangalore urban district are the Arkavathi and Dakshina Pinakini, which are not perennial.

The commercial areas are primarily in the centre of the town surrounded by the residential areas interspersed with industrial sites. The main industrial areas such as Peenya and Whitefield lie on the outskirts of the city. Parks and open spaces are seen in the city centre – Cubbon Park, Lal Bagh and Palace Grounds being the main. The city has spread radially outwards towards the south and south east.

As a result of concentration of industries and other economic activities, the city has grown rapidly in the 1990s and is characterised amongst the fastest growing metros in the country (TERI 1997).

Growth in travel demand

The volume of total passenger travel demand in Bangalore is expected to grow 3.9 times (from 14 to 54 bpkm) (TERI 1997). While on a per capita basis, over a 20 year period, that is, from 1990/91 to 2010/11, average annual growth rate in travel demand daily would be around 3.6% in Bangalore (from 9.5 km to 19.3 km per day). As in Delhi, in spite of a very large fleet size of private vehicles in the city, buses cater to a very high volume of travel demand. As given in Table 2.11, buses in Bangalore currently meet about 67% of the total passenger travel demand and would reduce steadily to 59% by 2010/11. Among the IPT modes, the role of three wheeler autorickshaw in meeting passenger travel demand in Bangalore would increase by about 3.5 times in 2010/11.

Table 2.11 Growth in travel demand in Bangalore

Year	2 wheeler	3 Wheeler	Car/Jeep	Taxi	Bus	Total passenger
			%			bpkm
1990/91	19.57	5.23	15.96	0.83	58.4	14.11
1995/96	15	7.41	10.21	0.46	66.92	25.48
2000/01	13.77	11.5	9.16	0.54	65.04	33.02
2005/06	10.85	18.45	8.56	0.66	61.49	40.28
2010/11	8.31	25.13	6.57	0.66	59.33	54.07

Road transport in Bangalore

Like other major cities, transportation infrastructures have not kept pace with this growth and increasing the congestion and pollution in Bangalore. The main traffic corridors in the city are: Bangalore – Madras National Highway (NH–7):

central to northeast: Bangalore – Thane National Highway (NH–4). The same highway also enters the city from Tumkur: this highway passes through the city entering from the northwest and leaving it in the southeast; Bangalore – Kanakapura: central to the south of the city; Bangalore – Anekal: central to the south of the city; Bangalore – Mysore: central to the southwest of the city; Bangalore – Bellary: central to north. Apart from these there are several internal roads that have heavy traffic. The ring road (partly completed) is one of these. The Anand Rao Circle, the Hudson Circle, West of Chord Road, Old Madras Road, Magadi Road, etc., are a few others. The current form does not have any orbital corridors resulting in most traffic movement through the congested core of the city.

Similar to the vehicle composition in Delhi, Bangalore has a population of five and a half a million and holds about 1.3 million vehicles, of which almost 80% are two wheelers (Source. Kharola et.al 2001). The buses owned by the Bangalore Metropolitan Transport Corporation numbering 2300 account for only 0.2 % of the total vehicular fleet but cater to almost 50% of the total passenger trips generated in the city (Table 2.10).

Table 2.12 Growth of registered motor vehicles in Bangalore

Year	2-wheelers	Cars/jeeps	Autorickshaws	Taxis	Buses	Goods	All vehicles
	%	%	%	%	%	%	Thousands
1990	76.68	14.67	3.21	0.42	1.19	3.84	577
1995	74.52	14.13	4.70	0.50	1.33	4.81	798
1998	74.26	14.03	6.57	0.72	1.42	2.23	1130

Source. MoST 2000

Public transport in Bangalore

Public transport in Bangalore was started in early 1940s. It was run by private company called Bangalore Transport Company Limited with 98 buses. In 1956, the Government of Mysore created Bangalore Transport Services (BTS), which was running within the city limits. In 1961, Mysore State Road Transport Corporation (MSRTC) was created under the Road Transport Corporations Act 1950 and BTS was converted as one of its division. This was further split into BTS (North) and BTS (South). This was later renamed as the Karnataka State Road Transport Corporation (KSRTC).

KSTRC has been operating various types of services like ordinary, express, luxury, suburban and inter state services. However, there was a gradual decline in the quality of service that was been delivered. Some of the major problems identified were the following:

- City services were irregular
- Fleet utilisation has reduced drastically
- Both the internal and external efficiency was very less in terms of resource management
- The maintenance of vehicles were poor in almost all the depots
- Losses were mounting

Recognising the need for reforms, the Government of Karnataka initiated a number of studies to identify strategies to improve the functioning of KSRTC. Various committees such as Dorai Raju Committee (1988), Kodandaramaiah Committee (1992), Cabinet Sub–Committee (1988/89), and Sindhia Committee (1994), went into the functioning of KSRTC to suggest reforms. Some of the suggestions made by these committees are as follows:

- To bifurcate the KSRTC into four or five organisations, including one for Bangalore city, to improve efficiency.
- Abolition of the position of Regional Managers and empowerment of Depot Managers
- To continue with the policy of nationalisation of routes
- To set up a fare fixation body or tariff committee to work out an escalation formula to increase the fares to cover increase of prices of inputs
- To rationalise routes

The primary reason for recommending the geographical unbundling of KSRTC was the size of the organisation did not permit efficient operation of the SRTU. For instance, there were concerns that urban operations would be neglected in a large corporation as these were generally loss making. Also, the size of the organisation did not allow micro management of daily operations due to delays in communication and lack of flexibility. Such an organisational structure also has the disadvantage of encouraging large unions that may cause industrial relations problems.

Pursuant to these recommendations, in 1997 Bangalore Metropolitan Transport Corporation (BMTC) was created as an independent Corporation under the Road Transport Corporations Act 1950 by bifurcating from KSRTC. It took over 13 depots, divisional offices and workshops and the bus stations attached to the erstwhile Bangalore Metropolitan Service divisions, with 2088 buses operating 1934 schedules and 13 294 employees, a staff ratio of 6.9 persons per bus. Currently public bus transport in Bangalore is provided by BMTC through a multiplicity of mechanisms. These include:

- BMTC's own city services which are operated using its own fleet
- Kilometre Scheme similar to that of DTC.

Operational performance of BMTC

BMTC was split from KSRTC in the year 1997 with the objective of providing an efficient, adequate and economical transport system to people. The occupancy ratio was the lowest in the year 1997/98. However over the years it has improved its performance. The operation of the corporation is categorised into city and suburban services. BMTC has 1063 routes. The average route length has increased from 19.45 km in 1998 to 19.66 km in 2000. (Table 2.13).

Table 2.13 Coverage of BMTC

Parameters	1997/98	1998/99	1999/2000
No of routes	1036	1048	1063
Avg. route length (km)	19.45	19.54	19.66
No of tnps	1934	2030	2121
Daily schedule km	442953	472289	500553

Source. BMTC 2001

Figure 2.15 compares the operational performance of BMTC with BTS before bifurcation. The percentage of off-road vehicles has reduced after bifurcation and the vehicular utilisation has increased to about 95% from 92%. The operational performance of BMTC has increased about 5.7 km on gross vehicle utilisation over the last three years. Simultaneously, during the same period the average number of passengers carried per day has increased to 2.55 million.

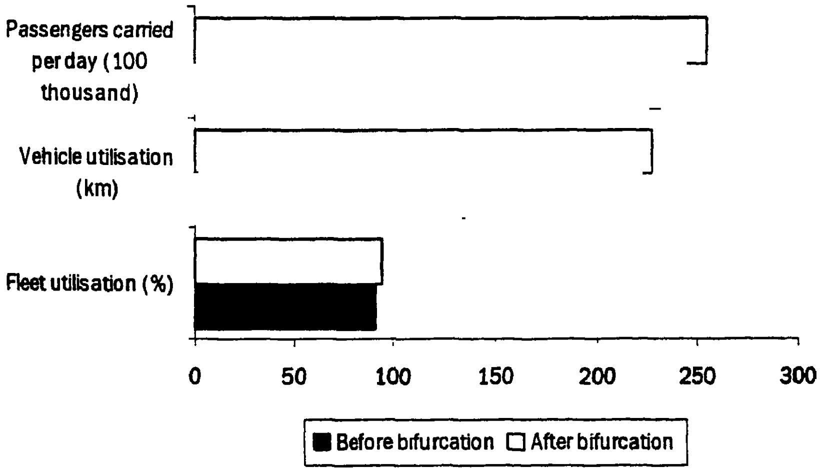

Figure 2.15 Operational performance of BMTC

Source. BMTC 1999, 2000, 2001

The improved performance in BMTC is in large measure due to improved employee performance. The percentage of direct staff (drivers and conductors) to the total staff has been reducing over the years after bifurcation. The staff ratio of BMTC at present is about 6.15 including private vehicles. In the year 1996/97, the accidents per 100 thousand kilometres were quite high. The accidents per vehicle have shown a decreasing trend from 0.41 per vehicle in 1996/97 to 0.26 in 2000/01. One of the major reasons for this is improved personnel policy and regular training to their drivers, and stringent selection processes procedure (Box 2.1).

Box 2.1 Recruitment of drivers and conductors

BMTC has evolved a transparent and unbiased recruitment procedure for drivers. This has been implemented successfully and appreciated by various people. The appreciable point in this procedure is that they have taken care to prevent the subjectivity in the assessment of testing officers. There are about five tests to judge the capability of a driver. In the first test candidate will be asked to take the vehicle forward without rollback in an inclined gradient. The capability of using the clutch, gear and the brakes is judged in this test. In the second test the candidate has to negotiate the curve within a minute without toppling or displacing the wooden stumps which are placed around the '8' shaped curve. The capability of forward maneuvering will be tested here. The capability of the driver as well as his judgement of reversing the vehicle will be tested by reversing the bus in 'S' curve. To judge the candidates reversing and parking capability, they have included reversing and parking the bus in a prescribed slot. These tests are recorded by video cameras and monitored by vigilance wing. Similarly the conductors are selected based on their exam marks in the qualifying examination.

Financial Performance of BMTC

The total revenue of the corporation comprises of direct revenue and revenue from other sources such as revenue from advertisement, contracts and sale of scrap. The percentage of revenues from other sources to total revenues is about around 9 to 10 percent. The total revenue earned by the corporation is presented in the Table 2.12. The revenue was Rs 3.46 million per day in the year 1996/97. The same has increased to Rs 8 million per day in the year 2000/01, implying an almost 2.5 times increase. The total revenue and total cost showed increasing trend from 1996 to 2001. The total effective cost per km was Rs 13.64 in the year 1996/97 has increased to 13.71 in the year 2000/01. Notably, the SRTU has been making profits since last year. Thus, it appears that the strategy of bifurcating urban and non–urban operations has been successful in the case of Bangalore.

Table 2.14 Financial performance of BMTC

	1998	1999	2000
Working expenditure	1254.32	1913.06	2316.24
Gross Revenue	1176.15	1652.72	2337.30
Profit	-78.17	-260.34	21.06

Conclusions

The review of the present delivery of public transport services in India reveals that there is considerable scope for improvement. In Delhi, the physical and financial performance of the public transport operator has deteriorated over the years. This has had implications for the share of public transport in meeting the travel demand in the city. In Bangalore, on the other hand, reforms in the public transport operator have resulted in efficiency improvements in the sector. The reform strategy in Bangalore of unbundling operations that provide different types of services provides evidence that public transport operations can be made viable.

Thus, it is clear that the provision of public transport services has to be restructured to ensure service delivery that matches consumers' expectations. This is essential to check the decrease in the modal share of public transport and ensure sustainable development of the transport sector.

Annex 2.1 Operational performance of urban SRTUs

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Fleet strength											
Mumbai	BEST	2051	2143	2548	2786	2892	3016	3057	3113	3221	3259
Delhi	DTC	3860	3722	3750	3665	3247	2313	1722	1648	2969	4546
Chennai	CHI-I	2039	2006	1980	2005	1785	1021	1137	1183	1316	1283
Chennai	CHI-II					1029	1038	1114	1112	1132	1283
Kolkata	CSRTU	837	843	914	927	858	860	877	875	816	780
Ahmedabad	AMTS	602	594	612	593	604	589	598	659	693	738
Pune	PMT	473	494	527	589	624	661	699	626	686	678
Chandigarh	CHNTU	315		341	375	393	375	383	378	388	391
Pimpri	PCMT	141	130	137		128	150	165	163	156	140
Thane	TMTU	30	58	60		89	124	162	193	192	197
Sholapur	SMTU	69	70	94	115		106		97	91	74
Kolhapur	KMTU	63	74	83	96	108	113	139	132	120	94
Bangalore	BMTC										
	Total	10480	10134	11046	11151	11757	10366	10053	10179	11780	13463
Km utilisation											1.0282
Mumbai	BEST	203	209	201	213	219	210	206	204	203	209
Delhi	DTC	233	219	213	212	216	251	270	268	232	217
Chennai	CHI-I	231	227	228	231	238	258	266	258	248	257
Chennai	CHI-II					181	232	242	235	234	246
Kolkata	CSRTU	164	169	176	180	183	191	192	193	195	193
Ahmedabad	AMTS	193	188	188	188	197	196	201	204	205	203
Pune	PMT	223	221	224	233	240	247	249	248	250	247
Chandigarh	CHNTU	232		256	272	285	291	290	303	309	305
Pimpri	PCMT	240	302	303		286	283	279	271	269	292
Thane	TMTU	166	191	192		208	190	193	188	184	185
Sholapur	SMTU	206	206	167	179		243		235	245	248
Kolhapur	KMTU	217	213	219	226	235	228	235	243	242	247
Bangalore	BMTC										213
	Average	210	214	215	215	226	235	238	237	235	236

Source. ASRTU 2000

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Fleet utilisation											
Mumbai	BEST	83%	82%	90%	92%	94%	95%	94%	94%	94%	94%
Delhi	DTC	89%	86%	86%	88%	88%	66%	54%	62%	86%	90%
Chennai	CHI-I	88%	87%	85%	85%	85%	96%	91%	90%	87%	86%
Chennai	CHI-II					88%	90%	91%	89%	85%	85%
Kolkata	CSRTU	75%	80%	77%	74%	70%	69%	73%	73%	74%	67%
Ahmedabad	AMTS	83%	82%	82%	80%	80%	82%	85%	85%	81%	84%
Pune	PMT	88%	88%	90%	89%	89%	89%	86%	81%	85%	86%
Chandigarh	CHNTU	92%		95%	96%	95%	92%	93%	92%	94%	94%
Pimpri	PCMT	59%	47%	50%		51%	61%	75%	74%	98%	61%
Thane	TMTU	44%	85%	85%		81%	92%	90%	89%	89%	80%
Sholapur	SMTU	84%	81%	90%	92%		85%		66%	61%	51%
Kolhapur	KMTU	77%	84%	84%	91%	92%	89%	87%	85%	86%	70%
Bangalore	BMTC										93%
	Average	78%	80%	83%	87%	83%	84%	83%	82%	85%	80%
Earning paise per km											
Mumbai	BEST	865	1097	1283	1393	1494	1739	1800	2101	2261	2331
Delhi	DTC	387	412	505	699	658	861	927	1030	1068	1143
Chennai	CHI-I	575	676	827	906	984	1073	1016	1092	1252	1193
Chennai	CHI-II						1048	1005	1081	1306	1248
Kolkata	CSRTU	477	533	560	625	676	715	702	738	808	831
Ahmedabad	AMTS	583	700	863	913	1046	1133	1212	1227	1384	1408
Pune	PMT	620	831	903	967	1033	1110	1147	1281	1346	1378
Chandigarh	CHNTU	362		520	563	622	714	759	883	914	1026
Pimpri	PCMT	484	603	661		859	934	1035	1093	1108	1066
Thane	TMTU	778	1129	1309		1561	1580	1515	1679	2011	2205
Sholapur	SMTU	544	659	812	811		878		1064	1089	1058
Kolhapur	KMTU	690	831	945	963	1000	1020	993	1080	1184	1249
Bangalore	BMTC										1299
	Average	579	747	835	871	993	1067	1101	1196	1311	1341
											1.0979

Source. ASRTU 2000

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Costs paise per km											
Mumbai	BEST	1185	1396	1489	1578	1733	1983	2134	2514	2690	2885
Delhi	DTC	751	975	1200	1452	1759	2319	3218	2792	1762	1718
Chennai	CHI-I	666	769	877	948	1001	1109	1232	1295	1379	1547
Chennai	CHI-II						1050	1174	1330	1503	1554
Kolkata	CSRTU	1126	1227	1263	1360	1497	1636	1655	1837	2101	2158
Ahmedabad	AMTS	750	915	1054	1225	1256	1372	1410	1537	1686	1877
Pune	PMT	685	900	1008	1008	1066	1101	1289	1428	1542	1628
Chandigarh	CHNTU	571		590	602	652	721	846	881	996	1119
Pimpri	PCMT	516	644	667		877	934	1028	1146	1289	1367
Thane	TMTU	1017	1184	1086		1178	1347	1513	1670	2000	2292
Sholapur	SMTU		661	575	597		800		937	1248	1362
Kolhapur	KMTU	723	851	939	979	1041	1055	1144	1170	1444	1577
Bangalore	BMTC										1255
	Average	799	952	977	1083	1206	1286	1513	1545	1637	1718

Source. ASRTU 2000

3

International experience in restructuring public transport

The situation of existing public transport institutions being grossly inadequate to provide the required levels of service to effectively deal with the rapidly increasing congestion and pollution described in Chapter 2 is not peculiar to India alone. It has been faced in most major cities around the world. Several of them have undertaken drastic reforms and restructuring of the manner of public transport provisioning (both bus and rail systems) with a view to meet the required demand and the expected quality of service. This chapter discusses each of the goals of restructuring and assesses the applicability in the India's context of the different privatisation models used internationally by assessing their suitability for Delhi and Bangalore. A summary of the international experience of privatising public transport is included in Annex 3.1. Detailed case studies on a number of international restructuring experiences are presented in Annex A to the report.

Modes for private sector participation in infrastructure

The private sector participation can take different forms in infrastructure sectors. The public transport sector in particular can either be unbundled and opened in a segmented fashion to private sector participation, or the complete sector can be opened to such processes. These options are discussed below.

Service contracts

This type of contract requires a private operator to perform certain specific tasks such as provision of buses. These are small duration contracts. By using this option, it is possible to take advantage of private sector expertise for performing technical tasks or even to open such tasks to competition. The public utility manager, under this option, has the responsibility for co-ordinating the tasks being performed by private operators and the responsibility for ensuring investment in the sector would lie with the public utility manager. It is not possible to bring management expertise or improve operating efficiency in this option. However, unlike other infrastructure sectors, it is possible to bring additional investment under this option in the public transport sector as is discussed below.

The most common form of the service contract in the public transport sector is the gross cost model for private sector participation in bus operations. This requires the government authority to set the routes operated and the fares to be charged. The fare revenue accrues to the government authority, which then pays the private operator an agreed amount per kilometre travelled, irrespective of the occupancy and ridership. The operator is thus simply a supplier of a service, insulated from the risks arising from the commercial performance of the service and concerned first and foremost to achieve operating efficiency and the service quality prescribed in the contract. The quality actually achieved needs to be monitored by a public entity with a system of penalties to deter under-performance. The government authority awards the routes via competitive tender to the lowest bidder. Preference is given to private operators that have achieved high standards of quality. This prevents private operators from concentrating only on dense routes, and provides the private operator with the incentive to improve quality.

As may be seen from the above, the terms of the gross cost approach are somewhat similar to that adopted by DTC and BMTC in the Kilometre Scheme described in Chapter 2 and Box 3.1 except that in the Kilometre Scheme the payments are fixed regardless of the type of route or the time of day. As against this, in the gross cost scheme the operator bids for the compensation. Such a bidding process permits an operator to factor in the type of route and the service quality expected into the amount being bid for as compensation.

Box 3.3 Gross cost in operation in Delhi and Bangalore

DTC reintroduced the Kilometre Scheme in Delhi in 1996/97 to augment its services after a period of decline of since 1992/93. Under this, private buses are hired to run services as required by the DTC. DTC collects the fares but the buses are provided and maintained by the private party. The private party is paid for each kilometre of operation, at a pre-agreed price. The private operator is assured of a minimum level of operation per day to assure him of minimum daily earnings.

A similar system of taking private buses on wet lease was introduced in BMTC recently. The minimum number of buses that an operator must run is ten and the maximum of 40 buses. The private operators are paid on the basis of kilometres operated. BMTC ensures that a bus would be given a minimum of 250 km per day. This gives tremendous security to the private operators. The cost of operation of these buses is less than the cost of operation for the BMTC owned buses. Restricting the induction to only new buses, giving rates which were linked to various indices, making a long-term agreement of 6 years the private operators, and plying these buses with BMTC own colours were the highlights of this scheme. BMTC saved on an average a sum of 20 million rupees per annum because of these buses.

In the gross cost approach, the operator bears the operating risks but is insulated from the revenue and ridership risks. This way each route can be operated by multiple private operators and the private operators do not have any incentive to recklessly race other private operator to each bus stop in order to gain more passengers. Furthermore, the private operators are not hurt by fares that do not correspond to costs. Hence, this approach is suitable in cases where the fare revenues are likely to be uncertain, such as in new routes or in low–density corridors and in cases where the government wants to subsidise commuters. An insulation from the revenue risks also means that the operator has no motivation for adopting dangerous passenger capture techniques and so this model can be used for allocating routes even to small bus operators. As against the above, the gross cost approach has the disadvantage that an operator would tend to compromise on ridership as this is usually not a consideration in the design of contracts for gross cost operators. Also, operators would prefer the less crowded and faster routes so that they maximise the mileage covered by them and thus maximise their revenues.

Management contract

This option transfers the responsibility for the operation and maintenance of the existing system to a private operator. The public utility is responsible for rehabilitation and new investment. Theses are again short duration contracts. The private operator receives a fixed fee or fees, which could be related to various performance parameters. This option could bring technical and management expertise to the sector and to some extent improve operating efficiency, while generally there would be no investment. The commercial risk as well as the investment risk remains with the public utility. Management contracts in the transport sector are particularly relevant in the management of depots and workshops of large bus operators.

Lease contract

A lease agreement typically lasts for 10 to 20 years. Under this option, a private firm leases assets of the public utility and takes on the responsibility for operating and maintaining them. The operator may pay the public utility a fee for use of assets and will not have the responsibility of financing new investment, which will lie with the public utility. This contract could bring in technical expertise, managerial expertise and operating efficiency to the sector. While investment risk lies with the public utility, the commercial risk is shared between the private operator and the public utility. This form of private participation is seldom seen in the public transport sector. Nevertheless, it is possible to develop lease contracts in the transport sector for some activities such as depots and terminals as is later suggested in Chapter 4.

Concession contract

A concession agreement or franchise is a means of awarding fixed term monopoly rights to provide a service to a private firm within a geographical area. Under this option, a private operator not only has the responsibility for the operation and maintenance of the existing assets but also for new investments. He has rights over the full use of all assets, although their ownership lies with the government or with the public utility. These are usually long–term contracts. The concession is governed by terms and conditions set through a contract, which outlines main performance targets (such as quality or coverage or both), arrangements for capital investments, performance standards, mechanisms for tariff adjustments, and arrangements for dispute resolution. This option could bring in technical expertise, managerial expertise, operating efficiency, and additional investment to the sector. The investment risks and commercial risks lie with the private operator.

The application of the concession type of private participation in the public transport sector is the net cost scheme in the public transport sector where the operator receives the revenue from ticket sales, as opposed to a fixed payment in the gross cost approach. A public entity continues to prescribe fares and service quality and may either provide a fixed subsidy, or receives a fixed contract fee (if the route makes profits). The government authority sets the routes and assigns each route via competitive bid to the private operator requiring the least amount of subsidy or willing to pay the greatest fee. The net cost option allows the private operator to keep the fare set by the government. The operator takes the risk of changes in financial performance over the contract period.

In the net cost approach, both the operating and the revenue risks are borne by the operator. Hence this would be suitable for high–density corridors, where the ridership would be more certain. Besides, this approach is more suitable if there are only a few operators within a specified area or zone so that they have no motivation to adopt dangerous passenger capture techniques such as rash driving and speeding. However, this would imply that a private operator would have a near monopoly over an area and hence would require appropriate regulation to ensure that such monopoly power is not misused. Thus, this approach is best allocated to those operators who have the ability to provide adequate buses to meet the demand of a sizeable part of entire area or zone allocated to them, with suitable regulatory oversight. Again, the government authority can give preference to private operators that have achieved high standards of quality. This provides the private operators the incentive to improve quality. Since each route is contracted out to a single private operator, the private operator need not compete for passengers on the route.

The net cost scheme is somewhat similar to the conditions under which the Blueline services in Delhi are allowed, except that the Blueline services are operated largely by single bus owners and they do not have a complete area or zone but are only one among several operators on a route. That brings in the motivation to adopt rash passenger capture techniques to maximise revenues. In the net cost scheme an entire route is contracted to an operator such that the risks of dangerous driving get mitigated.

Divestiture

This option, through the sale of assets or shares or through management buyout, can be partial or complete. It gives the private operator full responsibility for operation, management and investment. Unlike the concession, it transfers ownership of assets to the private sector. This is the model that has been adopted in the rail transport industry in UK (Annex A).

Characteristics of private participation models

In sum, depending on the PSP options, benefits would vary. The extent of variation of such benefits has been summarised in Table 3.1.

Table 3.1 Private sector participation and objectives

Objectives	Service contract	Management contract	Lease	Concession	Divestiture
Technical expertise	Yes	Yes	Yes	Yes	Yes
Management expertise	No	Yes	Yes	Yes	Yes
Operating efficiency	Some	Some	Yes	Yes	Yes
Investment	Some	No	No	Yes	Yes

The application of each model would depend on the specific local contexts and requirements. In addition, the extent of stakeholders' support and necessary political commitments would determine the best possible option. Such details have been summarised in Table 3.2.

Table 3.2 Stakeholder support & political commitment

Option	Stakeholder support and political commitment
Service contract	Low
Management contract	Low to medium levels needed
Lease	Moderate to high levels needed
Concession	High levels
Divestiture	High levels

Source. Cowen (1997)

Issues in private sector participation in bus operations

The earlier section describes some of the private sector participation models in the public transport sector. In bus operations, the two models most widely used models are the gross cost schemes, which is a form of a service contract and the net cost scheme, which is a concession contract.

However, as pointed out in Chapter 2, India's experience with private bus operations has been mixed. While the Kilometre Scheme operations have been successful in Delhi and Bangalore, there are concerns regarding the functioning of the Blueline Scheme. Some of the key concerns in this regard are the following.

- Meeting the universal service obligation
- Ensuring financial viability
- Improving safety
- Improving quality of service

This section identifies the various objectives of effective regulation and the initiatives taken by regulatory authorities around the world towards meeting them in for the private participation models identified above.

Meeting the universal service obligation

The private sector can augment capacity due to increased efficiency – being able to do more with less allows private operators to run routes otherwise unprofitable to the public sector, or to increase the frequency and so decrease the load on each bus. The international experience shows that deregulation has increased the number of buses in Morocco (Gomez–Ibanez and Meyer 1993). Private operators run routes that are uneconomical for the public sector in Istanbul and Bangkok (Gomez–Ibanez and Meyer 1993). Deregulation led to an increase in fleet size in Santiago de Chile during the period 1983–1993 (Gomez-Ibanez and Meyer 1993).

Nevertheless, while private participation should lead to an increase in public transport services, private operators prefer to concentrate on the more heavily travelled routes, while neglecting the less travelled routes. This can be seen in the case of Delhi, where the Blueline operators who had been assigned less travelled routes asked that the STA (State Transport Authority) change their routes. This is counter to the governments' desire to have public transport available for all of its citizens, not just those along the denser routes.

This problem can be addressed in two ways. The first means of solving this problem is cross subsidisation. This model assigns a mix of economic and uneconomic routes to each operator. The profit that the private operator makes on the dense routes makes up for the loss on the less travelled routes. This model has been adopted by Hong Kong (Armstrong–Wright 2000). In India however, the route design of the public transport sector is such that there are a large umber of routes. For instance, in Delhi and Bangalore, there are over 700 and 300 routes in the cities respectively. Thus the design of the cross subsidisation scheme would be extremely complicated because the government would have to assess the profitability of each route so as to balance the profitable routes with the unprofitable routes. Korea has overcome this problem by organising the private operator into large associations. These associations are assigned a mix of routes, and the private operator take turns with each other running the profitable and unprofitable routes assigned to their associations (Gomez–Ibanez and Meyer 1993).

Another way to correct for the varying profitability of routes is competitive bidding, where private operators bid for the amount of subsidy they would require to run each route. In the case of the dense routes, the bids would be negative; the private operator would pay for the privilege of running that route. Variations of this model are used in Adelaide (Radbone), Istanbul, Bangkok (Gomez–Ibanez and Meyer 1993), London, and the UK outside London. In the UK, local authorities offer subsidies for unprofitable routes to the lowest bidder but there is no bidding on profitable routes (Armstrong–Wright 2000).

Ensuring financial viability

Governments decide to cap the price of tickets in order to make them affordable to the less well off, to encourage the use of public transport over private transportation, or to give concessional travel to certain groups of people, such as students. It is politically difficult to increase fares, even when the cost of providing the service increases. In Delhi, there is no set formula for increasing the fares when inputs increase nor is there a periodic assessment of the fares. The fare rate is determined by political rather than by economic considerations (TERI 2000). In Bangalore, it is reported that an automatic fare revision formula has been instituted by the SRTU with the approval of the state government (Box 3.2).

Box 3.4 Automatic fare revision

BMTC has developed a formula for fare revision whenever the cost of operation escalates due to various reasons like increase in the wages, hike in prices of the fuel and other consumable materials etc. The government has approved the formula, which is as follows:

Diesel Price adjusted fare:

$F(DPA) = (F - D) + (RPD/BPD) \times D$

Where

- F is the Total cost per passenger km at the time of previous fare revision
- D is Diesel cost per passenger km at the time of previous fare revision
- RPD is revised price of diesel and
- BPD is basic price of diesel when the last fare revision was permitted

Increase in Dearness Allowance Rates:

$F(R) = F + [CPKM(L)/CPKM] \times P/100 \times F$

Where

- F (R) is Revised fare in paise per passenger km
- F is Total cost per passenger km at the time of previous fare revision
- CPKM(L) is Total Staff Cost
- CPKM is Total Cost of Operations
- P is percentage increase in DA to total Staff Cost

However, the private sector can be expected to augment capacity only as long as it is profitable to do so. The UK outside of London increased its capacity by 26% through deregulation. The trade off, however, was an increase in fares by 23%. London was able to increase capacity by about 29%, and reduce subsidy by

70%, but not without increasing fares (Armstrong–Wright 2000). The bottom line is that besides increasing efficiency, augmenting capacity must be paid for either by patrons in the form of higher fares, or by the government in the form of subsidies.

An increase in the private operator's costs without a corresponding increase in fares would also result in a decrease of the private operator's ability to maintain their vehicles, resulting in a decline in quality, which in turn causes ridership and revenue to fall. This is the case in Medellin, Colombia, where private operators are not able to replace ageing buses (Gomez–Ibanez and Meyer 1993). The same thing happened as a result of Kingston, Jamaica's 1983 privatisation, which resulted in the deterioration of quality and quantity (Armstrong–Wright 2000). The point is that, while private operator may be able to operate the bus service more efficiently than the public company, they still need a certain amount of revenue to cover operating costs, maintenance and fleet replacement. If fares are kept too low, then the private operator will not be able to replace or maintain their fleet.

This problem can be overcome in two ways. The first is to periodically increase fares using parameters such as inflation and fuel costs. This is also known as the cost plus formula where the fare is set equal to the cost of providing the service plus an acceptable rate of return minus an efficiency incentive factor. This model is widely used in most infrastructure sectors that are natural monopolies such as the power sector. A similar regime has also been adopted by BMTC in Bangalore (Box 3.2).

The second solution was adopted by Hong Kong and Santiago de Chile. In this model, the government authority allocates routes to private operator via competitive tenders. Criteria for selection includes fares to be charged, age of buses, and quality of service to be provided (Armstrong–Wright 2000). This allows the government authority to make trade–offs between quality, frequency and fares. This also means that the fare is renegotiated every time the tenders are re–bid. For Delhi and Bangalore this could be more difficult because the large number of private operator would make it difficult to individually determine the fare that each one could charge. It would also mean that there would be a large variation in fares across the city, which would be inconvenient for passengers.

Alternatively, routes can be allocated to private operators based on competitive tenders. Since the fares are fixed by the government, the private operators bid on how much of a subsidy they will need or how much they would be willing to pay the government to run the route at those levels of fares.

Internationally, this model is most often used by governments to get private operators to run uneconomic routes for social reasons, as is the case in the UK outside London (Armstrong–Wright 2000), Morocco (Gomez–Ibanez and Meyer 1993), and Bangkok. Bangkok is the only one of these areas to collect a fee for allowing private operator to run on the more profitable routes (Ray 2000).

Improving safety

As documented in Chapter 2, the privately operated stage carriage buses (Blueline) of Delhi have a poor safety record. Buenos Aires faces the same problem of aggressive driving by private operators (Salvucci). The desire to cut costs is also a large contributor to the problem. Despite the State Transportation Authority's regulation that buses have two drivers, more than 50% of drivers worked 12 to 16 hours a day as mentioned in Chapter 2. Furthermore, the quality of the private operator drivers is questionable, as 87.5% have not had formal driving training and they generally have low levels of education (Dhingra and Savant 1998).

These two problems, passenger capture and excessive cost cutting, arise largely in the net cost model. In the gross cost model, since the private operator is only a service provider and is insulated from revenue risks, there is no incentive for him to indulge in passenger capture. To address the problem in the net cost model, Walters suggests that there be competition for the market, but not in the market. Instead of having several operators competing for passengers on the same route, operators would compete to be awarded the concession for the whole route (Walters 1998). This way, the bus drivers would be less motivated to resort to aggressive driving, and instead be more concerned with improving the quality of their service in order to win future concessions. This could also ameliorate the problem of excessive cost cutting. Employing untrained and overworked drivers decreases the quality of service provided in the form of increased accidents and poor driver conduct. If the private operators were competing with other private operators for the rights to a concession, then the private operators would endeavour to increase quality even if that meant higher costs.

This solution requires that the government authority ensure that concessions are awarded competitively and with an emphasis on safety and quality. Not only would this require a certain standard of monitoring to assess the performance of the private operator, it would also require a large amount of political will. It is essential for the government authority to have the political will to punish unsatisfactory operators; otherwise this system will degenerate into nothing more than a patchwork of local monopolies. This system of competitive concessions has been used successfully in both Hong Kong and Santiago de Chile (Armstrong–Wright 2000). Unfortunately for this model, as mentioned earlier, under the Motor Vehicles Act 1988, private operators in India may only own between one and five buses, and so they would not be able to service a whole route unless that law is amended.

Improving quality of service

Another important concern is the reliability, punctuality and overall quality of the public transportation. It is felt that these aspects need to be improved if public transport is to compete successfully against two wheelers, three wheelers, and the private car. According to a survey presented in the Indian Journal of Transport Management, 38.88% and 29.30% of those surveyed said that the DTC and the Blueline had poor punctuality. 41.66% said that the DTC had poor dependability. 41.66% complained of poor cleanliness. The DTC was ranked as poor by 48.40 % for overall service. The privately operated buses fared no better, being ranked as poor by 48.50% (Goel 2000). BMTC has introduced a punctuality monitoring system based on radio frequency (Box 3.3).

Box 3.5 Monitoring punctuality using radio frequency method

In the radio frequency method a transponder is mounted on the bus and antenna is installed at the exit of the bus stand. Whenever the bus with the transponder moves below the antenna, the reader attached to the antenna captures the data on the dispatch of the vehicle. This data is transferred to the computer on line. Thus it helps to find out which all buses went late and by how much time. There is no possibility of manipulation of records in the system. Various reports are generated based on which the bus operations are being monitored.

There are two ways to improve reliability, punctuality and overall quality. Under Quality Incentive Contracts, the private operator receives increased payments from the government authority for positive quality achievements, and receive fines when quality standards are not met as is the case in London (Armstrong–Wright 2000). In competitive tenders, by placing routes up for re-bid every few years and awarding high quality private operator the routes of the poor quality private operator, the government authority is able to create an incentive for the private operator to run a high quality service. Hong Kong and Santiago de Chile both use this model (Armstrong–Wright 2000). Both these models are equally applicable to the net cost and the gross cost regimes.

With both of these models, monitoring is important. The government must be able to assess the quality of each individual private operator in order to determine whether to continue or terminate their contract or to give quality bonuses. However, under the competitive tender model, it would not be necessary to draw up more complex quality contracts, negotiate with each private operator, fine the private operator and resolve the disputes over fining that would inevitably occur under the Quality Incentive Contracts. Instead, in the competitive tendering model, the government authority could simply refuse to renew the contract of poor performing private operator.

Summary of the reform initiatives

An examination of the reforms carried out around the world reveals two main trends in the restructuring of public transport around the world. The first is to unbundle the monolithic and integrated services into more manageable and compact constituent units. This has generally preceded a greater involvement of the private sector in providing services in a competitive environment.

The unbundling has in some cases been done on geographic basis and in some cases on a functional basis. Thus in some cases, separate units were formed for operating services in different geographic areas and in some cases the unbundling created separate units for providing different kinds of services. Unbundling on a geographic basis was done in cases where a clear delineation of the areas of operation was possible, as in the case of the Argentina rail systems (Annex A). As against this, unbundling on a functional basis was done where the different functions of the monolithic organisation comprised a combination of activities that were natural monopolies and not natural monopolies. This approach was adopted in London (Annex A).

The second trend has been to segregate policy and planning functions from operational functions. This is clearly seen in the example of London where London Buses now has only a planning and procurement function and does not own or operate buses. Operations are carried out by private operators under contracts, which are monitored by London Buses Limited (Annex A).

The advantages that seem to emerge from such a restructuring are that it enables a separation of activities that are natural monopolies from activities that are not natural monopolies. Such separation makes it possible to bring in competition in activities that are not natural monopolies. Competition, in turn enables:

- improvements in efficiency
- enhancement of capacity by tapping private financial resources

- induction of more professional management
- induction of the 'State of the Art' in technology
- greater attention to consumer convenience rather than to operational convenience

Secondly, it becomes possible to channel scarce public funds into those activities that the public sector is best suited to perform and not use them up in activities that the private sector is better equipped to perform. It also enables a retention of only natural monopoly activities, in which competition is not possible, in public hands or be appropriately regulated.

Lessons for restructuring public transport

In this Chapter, several approaches to private sector participation in the public transport sector have been highlighted. The two relevant options for bus operations are the gross cost and the net cost options. In deciding between the two options a key concern is whether large private operators would come into the sector. If not, then the net cost option will not be able to solve the safety problem. This makes the gross cost option much more favourable. The gross cost option is also favourable because it is easier to integrate fares between different operators and different modes with the gross cost model (Walters 1998). Finally, if the government perceives the need to subsidise commuters, the gross cost option would shield the private operators from such revenue risks.

However, the gross cost option will requires more monitoring because the private operator will have no incentive to attract passengers or accurately collect fares. If the government authority cannot provide the required monitoring, then the use of the gross cost option will end in decreased quality, falling ridership, and increased costs to the government authority. If it is possible to assign each route to a single operator, then the net cost option is preferable because of the lower requirement of government monitoring and therefore a higher probability of success.

Given the immediate constraint in Delhi and Bangalore in terms of the lack of proven capacity of the private sector to operate large public transport fleets, the gross cost option may be a more feasible option in the short run to initiate private participation in the public transport sector. Also, it would allow the government to gradually phase out subsidies so as to minimise political and community resistance to restructuring. As a version of this is already in operation in both the cities in the form of the Kilometre Scheme, the only additional initiative necessary is to rationalise the terms at which buses are leased by incorporating quality and ridership considerations, and allowing the private operators to bid for compensation on each route.

Over time, operations under the Kilometre Scheme would allow the private sector also to develop its capability to operate and manage large public bus fleets. Also, a gradual rationalisation of the tariff regime would ensure the financial viability of the sector. In such a scenario, it would be feasible to transfer the revenue risk to the private sector and large bus operators should be allowed in the sector to operate under the net cost scheme.

Countries	Why did they restructure?	How similar was it to the India condition before restructuring?	What was the model of restructuring?	How successful was the restructuring?
Santiago de Chile 1983-1992	The public sector company faced losses and increased competition, which forced it out of operation when the Government withdrew subsides and relaxed entry to the market (Armstrong-Wright, 2000).	Santiago was very similar to Delhi The State controlled fares and routes. The public sector company was the sole provider of large busses, while there was competition from microbuses and shared taxis (Armstrong-Wright, 2000).	The government completely deregulated the sector. PO were free to operate any route and at whatever fare they chose (Armstrong-Wright, 2000).	The benefits were an increase in fleet size that meant improved frequency and decreased crowding of busses. Unfortunately fares increased due to price fixing. Congestion and pollution increased due to the excessive increase in the number of older busses. (Armstrong-Wright, 2000) Taxi use increased as well (Gomez-Ibanez and Meyer, 1993, p29).
Santiago de Chile 1992 forward	To overcome the failures of their previous deregulation (Armstrong-Wright, 2000).	Not similar, there was no public company. The fares and routes were determined by the private operators (Armstrong-Wright, 2000).	The government authority allocates routes by competitive tenders. Selection is based on age of the buses, capacity, quality of vehicles, fares to be charges, fare collection system, and terminal arrangements (Armstrong-Wright, 2000).	The benefit of this system has been a lessening of the number of busses by 35% resulting in decreased congestion. As well as a decrease in fares. The challenge faced with this change has been a hostile reaction from bus operators resulting in a bus strike The resolution reached was that the government would buy up the older buses that became surplus (Armstrong-Wright, 2000).
Kingston, Jamaica: public take-over 1974	The private company that operated all the busses could no longer fulfil the government's requirement that it service low density regions at unprofitable fares (Armstrong-Wright, 2000).	Not similar to India.	The bus company was taken over by the government (Armstrong-Wright, 2000).	Productivity dropped and costs rose. By 1983, the service was costing the government over US$1 million every month (Armstrong-Wright, 2000).

Country	What is the current model?	How successful is this model?	How applicable is this model to the India condition?
Hong Kong	Government authority franchises 6 POs with mostly distinct areas. Authority sets fares and routes in consultation with POs. Criteria for franchisee selection are experience, resource capability, proposed service, fare schedules, age of vehicles, availability of maintenance facilities (Armstrong-Wright, 2000).	Hong Kong has been very successful. This is attributed to the skills of the private bus companies, its strong administration and its willpower to replace unsatisfactory franchisees (Armstrong-Wright, 2000).	
UK outside London	The government authority does not regulate fares or routes. The PO is free to run any route they choose and at whatever fare they choose. The is competition in the market, as no operator has exclusive access of any routes. For concession rates, such as for students, the PO is compensated by the government authority so that they are no worse off. For routes that are not economical but are considered necessary for social reasons, POs competitively bid for the lowest subsidy needed for them to run the route and at the fare level dictated by the local authority (Armstrong-Wright, 2000).	The beneficial effect of this model has been a decrease in subsidies by 50%. Services supplied increased by 26%. The negative effect of this model has been an increase in fares above inflation. A decrease in bus use. A Lack of integrated ticketing. A concentration of services on profitable routes. Unreliability and confusion due the frequent changes in routes and lack of information. The are also concerns of individual operator cornering a market and behaving as a monopoly (Armstrong-Wright, 2000).	

Country	What is the current model?	How successful is this model?	How applicable is this model to the India condition?
London, net cost	London busses are currently operating on a net cost model. The PO keeps on bus revenue and receives a portion of off bus revenue derived from travel cards, bus passes and concession fares. The government authority receives or pays the operator the difference between the PO's projected cost and revenue.	Because POs have been encouraged to increase patronage, quality and volume of service have increased 29%. Subsidies have decreased 70%. Costs of operating the busses have decreased. Patronage has increased in part due to effective integration of ticketing. However there is concern that the pressure to cut costs have lead to a lack of investment in busses and a decrease in quality of service. To solve this problem, London plans to introduce Quality incentive contracts that increase payments for quality achievements. Also London may revert to the gross cost due to the complexity and costliness of administrative oversight of the net cost contract. (Armstrong-Wright, 2000)	
Nairobi, Kenya 1991 through 1998	One franchisee which could determine fares and routes, with very little supervision from the government (Armstrong-Wright, 2000).	This freedom of action allowed the franchisee to operate without subsidy in the face of competition from minibuses. This system fell apart when the roads were severally damaged by storms in 1998. (Armstrong-Wright, 2000)	
Bangkok	Government authority allows competition on routes. Collects a fee for allowing operation on some more profitable routes. Franchises out for nonviable routes at agreed upon prices (Ray, 2000).		

Country	What is the current model?	How successful is this model?	How applicable is this model to the India condition?
Istanbul	Public bus companies contract out to private companies the routes it finds uneconomical (Gomez-Ibanez and Meyer, 1993, p33).	POs are able to run these routes without subsidy and sometime pay for the access (Gomez-Ibanez and Meyer, 1993, p33).	This is similar to the kilometre scheme in Delhi.
Korea	Cross subsidisation is used POs are organised into associative Within these organisation, the POs take turn between the profitable and unprofitable routes (Gomez-Ibanez and Meyer, 1993, p33)		How well this would work would depend on the feasibility of organising the private operators in Delhi into co-operatives.
Adelaide, Australia	Fares are set by the government authority. POs bid for how much subsidy they will require (Radbone).		Applicable
Buenos Aires	Fares, routes, permits to entry into the sector, and safety are all regulated by the government authority. The sector is made up of hundreds of POs that do not receive any government subsidy (Salvucci).	The problems faced in this system include aggressive driving due to competition for passengers, air pollution due to poor maintenance, drivers giving change while driving, increased waiting time due the use of large busses which the PO favour because they are limited to a certain number of busses, lack of insurance (Salvucci).	Aggressive driving due to competition for passengers has resulted in very serious safety problems in Delhi. Adopting this model would most likely not improve or even worsen the safety problem.
Faisalabad	FUTS is an NGO that provides a co-ordination and management function for the city's POs. FUTS sets the fares and routes and enforces regulations. (TERI, 2000, p57-58)	Though initially successful, the success of FUTS has since disintegrated due to "mismanagement and criminal negligence of functionaries" (Cox and Love, 2001)	The initial situation is about the same in Faisalabad and Delhi, so this model could be tried, but there is no reason to expect a better outcome in Delhi.
Delhi, current situation	Blueline services: privately operated with routes and fares set by the state transport authority. Most private operators own less than five busses.	The Blueline services outperformed the Delhi Transport Corporation (DTC) on most parameters. Unfortunately, The Blueline services are noted for their poor road safety and poor consumer satisfaction. This is attributed to ineffective regulation due to the large number of private operators, poor quality of crew and overworking of crew (TERI, 2000 p6). The DTC is in severe financial straits having accumulated loss of 1.85 billion rupees in 1998/99 (TERI, 2000, p9).	

Country	What is the current model?	How successful is this model?	How applicable is this model to the India condition?
	Kilometre Scheme: DTC hires private busses to run routes. DTC collects fares and pays on a per kilometre travelled scale. DTC services: buses owned and operated by the DTC		
London gross cost	Before turning to the net cost model, London paid POs a fixed rate for operating a route and kept the fare box revenue.	Strict supervision was necessary because the POs have no incentive to increase revenue or improve the quality of the service. Because of this high supervision requirement, London switched to the net cost model.	The strict supervision required in this model will most likely be beyond the reach of Delhi.
Curitiba, Brazil	The metropolitan public transport system contracts private operators to supply service on a gross cost model. The operator receives a lump sum based on bus x km (Amsler, 1998).	Very successful due to the high degree of organisation and integration of the transportation network. The gross cost model is well suited to such a integrated network. However Curitiba is now facing the challenge of increased congestion due to the increasing number of private cars	This is an applicable model, but does require a significant amount of planning and oversight on the part of the government.
Copenhagen, Denmark	Since 1991, the local organising authority is privatising the bus network through tenders. These 4-year contracts specify the route and schedule and fares. The contracts are awarded based on proposed hourly cost of operation. Incentives and penalties are set related to quality of service.		This model is applicable to Delhi. Though Delhi will have a harder time providing the oversight needed with the quality incentives.

4

Restructuring strategies in urban public transport

Chapter 2 describes the current provision of public transport services in India and highlights the need for reforms. This chapter outlines the suggested reform strategy for restructuring the public transport operators so as to ensure expansion of the sector to check the decline in the share of public transport in the total travel demand in urban areas.

Need for reforms

It has been universally recognised that improved transport systems are essential for accelerated economic growth. Transportation in the urban context assumes even greater significance. Large agglomerations such as Delhi and Bangalore are seen as the vertices of continued economic growth. The productive efficiency of urban agglomerations will be maintained only if mobility requirements in the cities are fully met. However, this productive efficiency in urban India is now threatened due to the increasing number of vehicles causing congestion, and thus slower speeds on roads. Obviously transportation infrastructure could be the primary bottleneck for the unimpeded growth of the state. Thus it is important that the existing transportation infrastructure is utilised optimally. This would imply meeting mobility needs efficiently through a greater modal share of public transport.

Another major consideration for restructuring public transport is the continued drain on the exchequer. With greater emphasis on fiscal discipline, it is increasing becoming difficult for governments to continue funding such loss making ventures. In addition, the role of the state provision of services that can be more efficiently provided by private operators is in the increasingly being questioned in a number of fora.

Augmenting public transport

While it is recognised that the share of public transport in India is considerably higher than that in most developed countries, the cause for concern is the declining share. It is well recognised that public transport is less polluting and causes less congestion than personal vehicles, on a per passenger trip basis. The comparative road space occupied by each of these vehicles and the pollution n is given in Table 4.1.

nparison of various modes

	Pax / vehicle	Pollution load in gm/Pax-km	Congestion effect in PCU/Pax
trol engine	2	7.13	0.375
trol engine	2	4.76	0.375
verter petrol engine	4	0.93	0.25
;	40	1.00	0.075

ıows that though cars (fitted with catalytic converters) and buses
: same pollution effects on a per passenger basis, buses have the
ccupying far less road space, thus causing less congestion and
llution. On the other hand, 2 wheelers not only have a far more
:t on the environment than cars and buses, but are also
ɔm a congestion point of view. Hence, among the above modes of
ɜs are clearly the most desirable.

major reasons has been the inability of public transport operators
ith the increasing demand and the deteriorating quality of service
:ontinued losses and thus inadequate capital generation for
entation. This issue is dealt with is detail in the next section.
oblem has been the relatively little concern for consumer
. most cities, government–owned agencies operate and manage
rt services. Given the virtual monopoly that public sector service
y, service planning has been largely dominated by the dictates of
enience rather than by consumer convenience. With fares and
ɜd with costs of operation, there is little incentive for the service
ıprove efficiency. Also, being public sector initiatives, the
ımmercial orientation is limited. As a result, ridership changes
eration are not concerns of the management. Thus a change in
:gime is necessary to ensure attention to consumer satisfaction.
:gulatory reforms and institutional restructuring in the urban
t sector. Monolithic public entities need to be split up with
ɔn of the private sector into services they are better placed to

Mounting losses of State Road Transport Corporations

The considerations for restructuring State Road Transport Corporations also stem from mounting losses and poor operational performance, as highlighted in Chapter 2, resulting in a continuous drain on scarce budgetary resources. A number of activities of State Road Transport Corporations are of a nature that can be efficiently provided by the private sector. Also, private sector funds could be tapped for the purposes of generating revenues for the purposes of fleet augmentation and fleet replacement.

In the post liberalisation era, it would be difficult for Governments to continue to provide financial support to such loss making ventures, especially with the growing emphasis on fiscal discipline. Indications of such concerns can also be gauged from the Ninth Plan document where the Union government's policy regarding the funding of SRTUs is outlined. The thrust of the policy is to fund the acquisition of buses for replacement only, and not for fleet expansion. Any public bus fleet expansion is to be funded from the private sector. Also, the funds for fleet replacement would be made available only if the State Government is able to commit a similar amount for this purpose and the SRTU is financially viable. In fact, the Ninth Plan document also states that given the financial constraints facing the SRTUs, 75% of the public transport services should be made available from the private sector. The result of this policy has been the withdrawal of capital contribution to the SRTUs (Planning Commission 1999). Thus it would be difficult for the State Government to perpetually finance public transport losses, let alone make a capital contribution for fleet augmentation.

This would require that activities which can be performed by several operators, that is, those on which scarce public funds need not be spent, should be separated from those that are best performed by a monopolistic service provider, so that public funds need be used only for those activities where private funds are either not available or where public funding and management is desired.

Such a separation of activities would also have the advantage of throwing up other opportunities for revenue generation. Among them would be the potential of commercial exploitation of the land resources, that have not been taken advantage of as SRTUs has had to concentrate more on its immediate task of operating bus services and could not devote adequate attention to the commercial exploitation of its properties.

Comparative advantage of SRTUs

Some of the activities of SRTUs such as the workshop activities are not natural monopolies based on economies of scale and are currently being provided by a number of private sector operators competitively. Thus it may be difficult to justify continued public expenditure on such activities, especially if these services can be provided more efficiently by the private sector. Charles Lave uses this idea as the foundation for his argument that policymaking should be separated from operating. He sees the role of the government authority is to arrange or sponsor public transportation rather than supply the transportation itself (Lave).

A review of the current market structure in the urban public transport sector also reveals that SRTUs do not have a comparative advantage[a] in a number of activities they are undertaking. This is particularly true for bus operations where the private operators are able to provide these services in a more cost–effective manner (though given the universal service obligations in the sector, private operations would have to be appropriately regulated). Similarly, the SRTUs do not have any comparative advantage in operating workshop facilities, which are been competitively provided by the private sector for all types of vehicles.

Activities in the public transport sector

As brought out in Chapter 2, DTC and BMTC provide public transport services, using both their own fleet and by leasing buses from private operators under the Kilometre scheme. Also, DTC operates buses on inter city routes based on reciprocal agreements between State Governments, while in Karnataka, this activity is carried out by the Karnataka State Road Transport Corporation.

Apart from operating these bus services, both the SRTUs also maintain infrastructure to repair and maintain buses. The repairs and maintenance wing provides technical support to the SRTU buses only and not to private bus operators despite having excess staff in this category, as is the case with DTC (DTC 2001). Thus there exists this resource of technically competent manpower, which can be used to service additional vehicles.

Finally they also own land for the purposes of parking buses (at depots) and passenger terminals for providing traffic interchanges. This is another significant asset with the SRTUs. The book value of the land assets with BMTC is about 25 million rupees[a]. In the case of DTC, the book value of the two central workshops adds to nearly 3 million rupees. As far the depots and terminals are concerned, the total book value of the land and buildings with DTC under this head as on March 2000 was nearly 300 million rupees. The market value of these is expected to be far more. Interestingly, while the privately operated public buses (Blueline buses) in the Delhi are permitted to use the terminal facilities for picking up passengers, for which they pay a charge of Rs 2500 per month for using the bus stands and Rs 5000 per month for using terminals, there is no provision to let them use the depot facilities for parking. DTC collected nearly 20 million rupees in 2000/01 in such charges.

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[a] meaning a firm is more competitive in the delivery of that service

These activities are representative of most urban SRTUs in the country. Thus it is possible to classify the activities of urban SRTUs under the following independent heads.

- Operation of buses[b]
- Carrying out repairs and maintenance
- Provision of parking facilities for buses, terminal facilities for passenger interchanges, and bus stations.

The three activities mentioned above, though independent of each other in the sense of requiring an independent operational structure and separate manpower, do not function as separate profit centres. No separate accounts are maintained to allow an evaluation of which of these is a profitable activity. Ideally, these three activities should be operated as discrete profit centres.

Unbundling operations

Given the three distinct activities being performed by urban SRTUs in India, it is recommend that these activities be unbundled into separate profit centres. Such a separation is also expected to reflect the efficiency of delivery of these services and help in identifying areas of concern. This would ensure that each of these focuses on its core activity without being encumbered with the activities of other wings. The review of international restructuring experiences also shows that such unbundling would succeed with appropriate regulatory oversight.

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[a] The high book value of land assets of BMTC reflects a more recent valuation of land assets than DTC as the BMTC was created only three years ago

[b] As mentioned earlier, DTC operates buses on both urban and non urban routes

City bus operations

Operating city services is clearly not a natural monopoly because several private operators are already operating services on city roads, either legally such as the Blueline buses in competition with DTC in Delhi, or illegally in Bangalore. The international review detailed in Chapter 3 also reveals that with appropriate regulation, private operations of public bus services would be successful. Thus greater private sector participation in public bus operations is recommended in urban India.

However, it must be noted that India's experience with private operation of the public transport sector has not always been a success. Assessments of the Blueline buses in Delhi presented in Chapter 2 reveal the poor quality of service delivered and the low level of commuter satisfaction with these services. However, through private sector participation such as the Kilometre Scheme in both Delhi and Bangalore, the SRTU has been able to increase its market share without any additional capital expenditure. Also, as discussed in Chapter 3, the gross cost option would also allow for integration of fares between different operators and different modes as also allow for the government to subsidise commuters while shielding the private operators from such revenue risks. Thus private participation in the public transport sector would have to be preceded by an efficient regulatory framework.

The functioning of the city bus operations would have to take into account the current structure of the public transport sector in the country. As described in Chapter 2, urban public transport services are currently of three types.

- Those operated by the SRTU using its own buses
- Those operated by the SRTU using hired buses under a Kilometre Scheme in Delhi and Bangalore
- Those operated by private operators under stage carriage permits obtained from the STA such as the Blueline buses in Delhi.

Using its own buses puts a tremendous strain on public funds and public budgets are no longer in a position to finance such capital investments. In using hired buses, the STRU would be able save on capital investments as also reduce its working losses arising from lower operating costs as in DTC as illustrated in Chapter 2. However, it will be saddled with the problems associated with the current form of the Kilometre scheme, namely the unwillingness of operators to operate on crowded routes and during peak hours or their motivation to make compromises on ridership. In allowing only private operators, under the Blueline kind of system, the public transport system would remain uncoordinated and also run the risk of dangerous driving practices being adopted by the operators. Unprofitable routes may not even be served.

Keeping in view the precarious financial position of the Government and the continuing losses suffered by the SRTUs as also the feasibility of bus services being provided in a competitive market, greater involvement of the private sector in operating services in the city is recommended. The government should largely concern itself with policy–making, planning, co–ordination and regulation, rather than with the actual operation of services.

Hence it is recommended that SRTUs should not augment their urban bus fleet. The additional demand should be met by obtaining such services from private operators on gross cost contracts. Over time the SRTUs should phase out their own bus services by not replenishing fleet and substituting its services by contracted services. However, it may not be possible for SRTUs to stop fleet augmentation immediately due to concerns regarding universal service obligation in the public transport sector. Also, some time lag is expected for developing appropriate contratural arrangements for the gross cost regime. Thirdly, a sufficiently large state owned public bus fleet would provide stability in the sector in the transitional period during which the private sector could demonstrate its capability to service the sector. Finally, it may be prudent for the SRTUs to augment their fleets to address labour issues by ensuring that manpower surplus of drivers and conductors is reduced.

In the case of Delhi, currently DTC has over 2400 buses operating on the city routes with over 1600 buses that have been inducted since March 2001. This would imply that DTC would have a substantial market power in the public transport sector at least until 2010[a]. Similarly, in the case of BMTC, over 200 buses have been purchased in 1999/2000.

However, as highlighted in Chapter 3, to avoid the pitfalls associated with the Kilometre scheme, it needs to be recognised that the cost of operation would vary from route to route and also over the time of day. The cost of operation on a high–density route with frequent and longer stops and a higher load factor would be higher than on a lower density route. Similarly, peak hour operations would be more expensive than off peak operation. It is for this reason that under gross cost contracts the operators would prefer low–density routes and off peak operations. In order to motivate them into peak period and high–density routes, the compensation payable should be more than in the less expensive routes. It is also unlikely that the small bus owners would have the requisite expertise and skills to bid for routes on a scientific assessment of the operating costs. Hence, it would be advisable for the regulatory agencies responsible for provisioning public transport in the city to have a series of rates determined through a scientific assessment of operating costs. Besides, for gross cost contracts to be successful, an effective monitoring system needs to be in place to ensure that the contractual terms are adhered to. This would imply investments in vehicle tracking infrastructure. This issue is discussed in detail in a later section.

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[a] assuming a average life span of 8 years for a bus

Over time, it is expected that the private sector operations would mature and it would be possible for the government to withdraw from operation of public buses completely and only regulate the sector. Such a gradual process would also allow for the SRTUs to recover their investments in the public transport sector completely. Also, public bus operations for an initial period in competition with the private sector would enable a regulatory agency to set a benchmark for quality and also to enable some experience to be gained with net cost contracts before public operation is completely stopped. A gradual process would also help build support for such reforms. Finally, as mentioned in Chapter 3, a gradual rationalisation of the tariff regime would ensure the financial viability of the sector and it would be feasible to transfer the revenue risk to the private sector. As highlighted earlier, in the case of Delhi and Bangalore, since new buses have been inducted recently, the transitional period is expected to last at least eight years.

Thus, in the long run, the gross cost contracts should give way to net cost contracts that are entered into through a transparent bidding process. Such contracts should be entered into for a specified area of operation or a zone rather than for individual routes as is the case with the Blueline buses in Delhi. This would necessitate that the net cost contracts are entered into with relatively large operators or co-operatives that are in a position to place an adequate number of buses to meet the contracted level of service in an entire area instead of a number of single bus owners on each route. This would also ensure that, being large operators, the operations would be organised efficiently and would be managed on corporate principles.

Inter state operations in Delhi

The DTC is currently operating 147 inter–state routes linking various locations in Delhi to locations in Uttar Pradesh, Haryana, Punjab, Himachal Pradesh and Jammu and Kashmir.

The inter–city services of DTC can be broadly classified into sub–urban services and long distance services. The sub–urban services are those that largely cater to the demands of daily work related commuting trips from the suburbs of Delhi. These suburban services would need to be integrated with the urban services. These should, therefore be brought under the ambit of the city bus operations discussed earlier. As against this, the long distance services cater to travel demand from beyond the suburbs and the passengers would not be daily commuters. These operations should be unbundled from city operations into a separate corporate entity as the geographical area of these operations can be clearly delineated from the area of city operations. This is similar to the restructuring of KSRTC where urban operations in Bangalore were unbundled into a separate corporation, namely BMTC. Further, the inter city operations are carried out under Government to Government reciprocal agreements and, therefore, if these operations need to be continued, they can only be carried out under public ownership of this company. It has been observed from the recent financial data that interstate operations make relatively lesser losses (Table 4.2) and it is possible for such operations to become profitable with some improvement in management.

Table 4.2 Financial performance of DTC operations in 1999/2000 (in Rupees million)

	City		Interstate
	DTC	KM Scheme	
Revenue	1526.33	1691.07	749.70
Costs	3001.67	2090.80	947.58
Loss	1475.34	399.73	197.87

Source DTC 2000

It is recommended that over time the operation of inter city services by a State owned corporation in Delhi should be discontinued and the reciprocal agreements that necessitate public operation should be allowed to lapse in preference for private operations. Private operators, with a permit from the STA of one state, and having paid the composite fee for operation in the other states, could provide inter state bus services, thus limiting the exposure of the State Government in this sector.

Depot and terminals

The ownership and management of the depots, terminals and bus stations is a natural monopoly and it would be inefficient for a multiplicity of operators to own and manage these infrastructure facilities. It is best for these to be provided as a common facility for all operators. Nevertheless, this can be still operated as a separate profit centre in the form of a separate corporation under Section 17A of the Road Transport Corporation Act 1950. Due to the monopoly nature of the activities proposed, it is recommended that the State Government retain a controlling stake in this corporation, thus effecting partial divestiture. Another alternative here would be to allow professional management of these properties by the private sector using lease contracts. In either case, unbundling this activity from bus operations by setting up of a separate corporation would facilitate private participation.

This corporation should enter into contracts with the inter city bus corporations and the SRTU or any private operator to allow parking within its premises at an appropriate fee. It would also charge a fee from every bus that uses its terminals and bus stations. Every depot would need to have a small repair facility (DTC and BMTC have a small workshop in every depot today). This corporation could lease out some space for such repair facilities either to the workshop company or even to a private workshop, in accordance with its best commercial judgement.

Finally, this company could also earn substantial revenues through property development and advertising. It could lease out space for suitable retail outlets for additional revenues. This would have the twin benefits of revenue generation as well as improving access to public transport. Some initiatives for commercial development of property with the SRTU have been undertaken by BMTC (Box 4.1.). These have been undertaken without any external assistance from a professional consultant.

Box 4.1 Commercialisation of bus terminus

In a metropolitan city like Bangalore, the bus stand acts like a nucleus around which the commercial activities proliferate. The revenue generated in these informal commercial activities has a potential to fund the construction of entire bus stand. In Bangalore they have constructed five bus stands based on this concept. In all the new five bus stands BMTC has also leased out the floor space for the offices, banks and commercial utilities. They have also generated revenue through advertisements on bus panels etc. These activities have generated huge revenue, over 51 million rupees in 2000/01.

On the other hand, however, DTC lacks the professional expertise to develop or manage commercial property. Hence, it is suggested that separate Special Purpose Vehicles (SPVs) may be considered for each property proposed to be developed, or a number of properties, based on commercial considerations. The

SPV could be a joint venture with a strategic partner such as a reputed property development company so that the requisite property development and management skills are available to it. With a number of SPVs, it would be possible to involve a number of property development companies. The joint venture would also enable a fair amount of initial capital to be generated by partial divestment of public equity, so that these funds could be used for the property development investments. The depot corporation could be a holding company owning the public shares in each of the SPVs.

However, it is important to recognise that commercial development of the properties allocated to this company could be more remunerative than provision of parking facilities for buses, or interchanges for passengers. Thus if the company is to operate on commercial considerations only, there might be a conflict in the provisioning of such services and operating only on profit considerations. Hence, it is recommend that though the company should operate only on commercial considerations, for commercial development of its properties it should need the approval of appropriate regulatory agencies in this sector such as the STA or any other independent regulator. This would be in addition to the approval required from relevant land use regulators such as the Delhi Development Authority in Delhi for commercial operations in land earmarked for transport infrastructure in the city. Where commercial operations have been approved, the option of a strategic partner such as a reputed property development company could be examined. In addition, the private partner should either not be allowed more than 49% equity or there should be an appropriate agreement with each SPV to ensure a minimum supply of parking space and other depot/terminal facilities. Ideally, this company should put land to commercial use only after meeting the needs of the transport sector. One successful initiative in this regard is the Shivajinagar bus terminal in Bangalore (Box 4.2).

Box 4.2 Integrated bus terminus

BMTC has constructed a new bus terminus at Shivajinagar, one of the city's major transport hub. This bus terminus has been constructed with all the necessary features like multi level parking space for other private vehicles, space for waiting commuters, easy entry and exit for passenger etc. The speciality of this bus stand is that it has provided subways for the easy movement of passengers from one bay to the other without any interference. Here they have also provided parking space for personalised vehicles thus ensuring commercial viability of land development along with meeting the transport sector needs.

It may be noticed that this company would enjoy a considerable monopoly power with regard to terminals and bus stations. While it would be allowed to charge a fee for the usage of depots and terminals, there would be a strong need for proper regulation of terminal and usage charges due to the virtual lack of competition.

Repairs and maintenance workshops

Management of the workshops and repair facilities is again not a natural monopoly; there are several private workshops at which repairs could be carried out and there is no need for public funds to be spent on these facilities. However, given the fact that substantial infrastructure for repairs already exists with SRTUs, this may be used for the repairs and maintenance of all buses and other motor vehicles. The second advantage is that SRTUs also have technically competent manpower that can be used to service the city vehicle fleet. However, the repairs should be done on a purely commercial basis, by charging market-based fees. If this activity can not be sustained in the public sector, then it should be privatised. It is to facilitate this that a separate company has been suggested.

Thus the repairs and maintenance activities should be unbundled into a separate company, registered under the Companies Act, 1956. Its primary function would be to own, operate and manage the repair and maintenance infrastructure of the SRTUs. This company would earn its income by charging for the repairs its carries out, on a commercial basis, keeping in view the market trends. It would be operating in a competitive market and hence there may not be any need to impose restrictions on its repair charges. It could even enter into long–term contracts for repairs and maintenance with any bus operator including the SRTU.

As stated earlier, it is recommended that this company should be given the mandate to take up repairs of any vehicle that comes to it, on a purely commercial basis[a]. As a supplemental source of income, it could be declared as an Authorised Testing Station to issue Certificates of Fitness as per the requirements of Section 56 of the Motor Vehicle Act, 1988. The current infrastructure for the issue of such certificates for commercial vehicles in the city is extremely inadequate and allowing this company to also discharge this function would substantially enhance the capacity of this certification facility. It should also strive to become the authorised service station of some leading vehicle manufacturers, including car and two wheeler manufacturers, in order to earn additional revenues. Here it may be useful to operate with assistance from a strategic partner. Over time, the State Government could divest its stake in the company to the strategic partner or through the stock market, thus completely privatising the company.

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[a] Analogously, SRTU would be free to get repairs and maintenance done at this company or any other workshop based on commercial considerations

Other issues to be resolved

With the restructuring suggested above, there would be several other issues that would have to be resolved. These are discussed in this section and some solutions are proposed. One of the most contentious issues here is labour restructuring and is discussed in detail in Annex 4.1. Some of these issues are also discussed later in the report.

Dealing with special services

There are several special services that the SRTUs render that would need to be reorganised under the new arrangement. Most important among them buses provided for special occasions such as provision of buses to schools and for running university specials in Delhi. At present DTC is running about 900 buses on school trips and about 400 buses as university specials.

Various public schools in Delhi hire buses from DTC for transporting students to and from schools. In addition, some schools also own buses. The schools also charter contract carriage buses from private operators for this purpose. These are largely a requirement of the public schools, where the ability to pay for the bus services is relatively high. Thus, it is suggested that DTC should compete for providing these services on its commercial terms with other private operators. On a long–term basis, it would be desirable for the respective schools to own their buses from a safety point of view. In case the schools are not able to undertake this, DTC could enter into a long–term arrangement to provide buses to several schools as a common facility. For this purpose it could acquire a certain number of specially designed buses to meet the needs of schools. However, it is reiterated that this should be on purely commercial terms.

With regard to university specials, it is to be noted that these are essentially peak hour services provided by DTC on routes with a heavy traffic of students commuting to and from the three universities in Delhi. Though these buses enjoy very high patronage, these operations that are generally loss making as university students in Delhi are provided with concessional passes. Losses on university special routes arise from the higher patronage from students compared to other routes. Thus the issue here is not the provision of these services but the concessional passes given to the students. This problem could be resolved by having a mechanism for the government to compensate an operator for loss of revenue on account of services being used by concessional pass holders. Given the above, there would be no difficulty in these services also being contracted out like other city routes.

Similar to university students, there are a number of other special categories of commuters who receive concessional passes. These include freedom fighters, elderly people, physically challenged people, etc. Passes for such special categories should also be directly subsidised by the government in a similar manner.

Management of passes and fare integration

SRTUs have a system of allowing concessional bus passes for regular users. In a situation where several operators would be providing services it would be necessary that these passes are valid over services provided by a number of operators. This would raise issues regarding sharing of revenues from the sale of passes – the concession given for pass holders would also have to be compensated for in proportion to the extent to which an operator's services are utilised by a concessional pass holder.

Finally, it is likely that the some kind of fare integration would have to be effected between bus services and the MRTS in Delhi, to increase the attractiveness of the public transport system. This would call for a single clearing–house system to be put in place. A clearing–house company could be set up that would sell the passes to be honoured by all operators, including the MRTS in Delhi. It has been reported that a special purpose vehicle is being set up by the Indian Railways to co–ordinate such activities between DTC and the MRTS (Box 4.3).

Box 4.3 Integration of fare structure

DTC is planning to introduce the smart card system with the help of DMRC. In the initial stages it will be implemented only along the routes of MRTS. These cards can be used both in the trains well as buses. This will reduce the waiting time of passengers near conductor's seat, which will reduce both the alighting and boarding time. The fare structure and pass value is yet to be decided.

ging the Blueline buses in Delhi under the restructured arrangement

Apart from restructuring DTC in Delhi, another area of concern in the public transport sector in Delhi is the Blueline services. Clearly, such operations would not fit into the new scheme of things. However, it would be legally difficult to terminate these services as they are operating under valid permits. Nevertheless, recourse could be taken to the provisions of section 103 (2) of the Motor Vehicles Act, 1988, which permits the State Government to cancel an existing permit or modify the terms of an existing permit. In doing this, it would be necessary to ensure that no injustice is done to a small operator who would have invested a considerable amount in the purchase of a vehicle.

However, as mentioned in Chapter 3, strict enforcement under a net cost regime would require strong political will. Also, there may be a disruption in public transport services if these operators were not to join the Kilometre Scheme immediately. Another alternative for these services would be for the operators to form large co–operatives and such co–operatives could then be given operating contracts. Again, the effort required on part of the government to form association comprising 3000 individual private operators is enormous. Finally, these permits could be allowed to lapse and not be renewed by the STA. This would allow for a gradual withdrawal of the Blueline bus services in Delhi. Hence, it is recommended that the existing permits may be cancelled but the buses are brought under the ambit of gross cost contracts with all such operators being assured that they would be brought under the gross cost system.

aging the Vehicle Tracking Infrastructure

Both DTC and BMTC have plans to set up a vehicle tracking system to monitor the movements of the vehicles (Box 4.4). Such monitoring would enable enforcement of the gross and net cost contracts. Clearly, such a system should be financed and managed by the agency that wishes to monitor the contracts and ensure that they are adhered to. This would imply that till such time as the gross cost contracts are operational, the SRTUs as the agency that enters into the

Box 4.4 Tracking the vehicles using Global Positioning System

In this GPS module in BMTC, antenna and the receiver are mounted in the bus, which receives signals from special satellites. The receiver computes the co-ordinates using these signals, which are then stored in the data logger, attached to the core module. Thus records the data on the positional values of the bus at every minute. This can be downloaded once in three days and processed separately. The present system is off-line system. All these led punctual operations, thereby improving reliability. Similar to BMTC, Bangalore, DTC is also planning to track vehicles using Global Positioning system. The major difference is that this will be on-line. This would help the DTC to track the vehicles running on the road every two minutes. DTC is planning to install at the ISBT bus terminus on a trial basis.

gross cost contracts would have to manage them.

Annex 4.1 Labour issues

The restructuring of the SRTUs would imply substantial reorganisation of manpower amongst the various constituent units. Such a strategy would also lead to significant displacement of staff from the parent organisation. In addition, some employees may also be rendered surplus as a result of the proposed restructuring.

A review of the current staff allocation across various activities reveals that there is considerable variation in staff bus ratios in the SRTUs. A comparison of some of the SRTUs with the best performers in the country also reveals that there is surplus staff in nearly every category (Table 4.3). Only SRTUs either with more than 1000 buses or operating in metropolitan areas were considered for this analysis

Table 4.3 Current manpower profile of some urban SRTUs in the country (personnel per bus)

SRTU	Administration	Drivers	Conductors	W&M	Traffic
APSRTC (City)	0.28	2.52	2.56	1.06	0.48
BEST	1.32	3.58	4.22	2.10	0.77
BMTC	0.44	2.10	2.20	0.18	0.77
DTC	0.99	1.96	1.92	0.17	1.93
CSTC	1.95	3.32	3.67	2.57	0.99
CNI I	0.82	3.03	2.88	1.99	0.29
CNI II	0.72	2.84	2.96	1.59	0.29

Source. ASRTU 2000

In light of the recommended restructuring, the allocation of the existing workforce to the various components is described below. As labour issues could be one of the most important obstacles to the proposed restructuring, the staff allocation in the specific context of DTC and BMTC is also discussed, and strategies to overcome labour constraints are suggested.

us operations

Given the above suggestions, the SRTUs would initially need traffic personnel, conductors, and drivers currently engaged in city bus operations. However, as the operation of its own buses comes down, the drivers would start becoming surplus and would need to be offered VRS packages. In the long run, as the gross cost contracts give way to net cost contracts, the conductors would begin to join the surplus category. However, even with completely private operations, the requirement of traffic supervisors would continue for the monitoring and planning function in the regulatory agencies. In fact the requirement of this category of personnel may go up as the monitoring and planning function would have to be more intense. Thus it would be prudent for the SRTUs to train some of the senior conductors and drivers to take up this responsibility so that the need for shedding surplus staff at a later stage is minimised.

Depots and terminals management

No staff is currently earmarked specifically for depot management except the staff of the civil engineering wing. Hence, the depot and terminal management would have to be carried out using the administrative staff of SRTUs, with proper training as may be required. The staff of the civil engineering wing would also be allocated to this company.

The major functions of this company would involve proper maintenance and upkeep of the premises and ensuring security of the vehicles using their facilities. In addition, it would need to carry out finance functions like billing, cash collection, accounting, etc. If the property development function picks up, it would need specialists in property management, including legal personnel.

Workshop company

All the staff of the workshops, including the mechanics and the support staff, would stand transferred to this company.

Labour issues in DTC

The splitting up of the DTC would require allocating the present staff amongst the constituent units. The current staff profile of DTC is given in Table 4.4.

Table 4.4 Current manpower profile of DTC

Category	Number
Drivers	6897
Conductors	12031
Technical personnel	6795
Administrative staff	4159
Traffic Supervisory	1052
Total	30934

The exact number that they would really need in the restructured arrangement is a function of the number of buses that they would operate and the number that would run under its management. As stated earlier, the traffic supervisors, drivers and conductors would have to be allocated amongst the bus operations. The technical personnel and all other repair and maintenance staff would have to be allocated to newly formed workshop company. As far as the separate corporation for depots is concerned, it is seen that the DTC has no specific category that manages the depots and terminals. The current staff in the depots comprises of employees manning the workshop facilities, traffic supervisors, and some general administrative staff. Hence the manpower for this company would have to come out of the general administrative staff.

In order to determine the exact number of employees that would be required and the number that is likely to be surplus, DTC's own targets of staff–bus ratio for drivers, conductors, and traffic supervisors were compared with those of other urban SRTUs in the country for determining the staff requirement of inter state bus operations (Table 4.5). Based on this comparison, the best staff to bus ratio based on the SRTUs listed in Table 4.5 was assumed for the analysis.

Table 4.5 Staff bus ratio comparisons across SRTUs

	Administration	Drivers	Conductors	Traffic supervisors	Technical
DTC target	1.00	2.50	2.50	0.25	1.75
DTC actual	0.99	1.96	1.92	0.17	1.93
ASRTU average	0.93	2.76	2.92	1.38	0.79
Best in ASRTU	0.28	1.96	1.92	0.17	0.29
	(APSRTC City)	(DTC)	(DTC)	(DTC)	(CNII)

The staff redeployment was estimated as follows. 958 buses are currently being operated on inter–city routes. Its current city bus fleet of 2565 is adequate to absorb all staff in the driver category. Also, the number of buses that should be plied under a gross cost scheme so as to employ all the conductors with DTC that remained after taking into account the number required for inter state and own bus operations was estimated. The entire repairs and maintenance staff was allocated to the workshop company. The number of buses that need to be serviced based on the staff bus ratio targets of DTC was estimated. Finally, the staff requirement of depot corporation was estimated using a norm of 30 persons per depot/terminal, given DTC has 33 depots and 9 terminals in the city. Based on the above, the staff required has been worked out in Table 4.6.

Table 4.6 Staff requirements for the proposed restructuring of DTC

	Administration	Drivers	Conductors	Traffic supervisors	Technical	Total
Bus operations	1139	6897	12031	832		20899
Depots and terminals	1260					1260
Workshop company					6795	6795
Total	2399	6897	12031	832	6795	28954

The increase in the number of buses that is necessary to accommodate the present surplus of conductors is given in Table 4.7. The increase in the public bus fleet necessary is marginal and should be easily achievable[a].

Table 4.7 Number of buses under DTC for employing all drivers and conductors

	Number of buses	Additional requirement
City	2561	0
PO (KM Scheme)	2747	8
Inter state	958	0
Total	6266	8

It emerges from the above that the likely surplus in different categories would be as given in Table 4.8.

Table 4.8 Surplus staff under various categories after restructuring DTC

Category	Number
Traffic Supervisors	220
Administrative staff	1760
Total	1980

Thus there would be a surplus in the traffic supervisory and the administrative staff. The total surplus would be less than 2000, just over 6% of the DTC staff strength. It would be necessary to either find areas where this surplus could be re-deployed or to offer them an attractive VRS. Some of this manpower could also be absorbed in the restructured regulatory arrangements being suggested in Chapter 5.

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[a] Since the Kilometre Scheme has since been withdrawn, the increase in number of buses necessary would be significantly larger

An avenue for gainfully employing some of the surplus staff would be the additional services that would be expected at terminals and bus stops. For example, ex–employees could be given preference in the allotment of retail outlets and other passenger amenities at the bus stops and terminals.

In the category of technical personnel, workshop company would be at liberty to undertake the repair of any private vehicle on a commercial basis. Given the valuable assets that this company would own, both in terms of technical infrastructure as well as trained manpower, it should be in a position to capture a large part of the repair market. The current number of employees in repairs and maintenance would be fully engaged if the company can get a market share of about 3900 buses based on the target bus staff ratio for repairs and maintenance staff. Also, they should strive to become authorised service stations of vehicle manufacturers. In this regard, recent initiatives in DTC improving the management systems in the workshops would improve their competitiveness (Box4.5).

Box 4.5 E-governance in DTC workshops

DTC is planning to introduce E-governance in the management system for the depots. All the depots and workshops will be connected with the wide area network, which will show the inventory of the each items available in each depots. This would help the depots, which is in deficiency of the same items. This will improve the efficiency of the management.

Labour issues in BMTC

Carrying out the above analysis for BMTC also, the present staff in various categories in BMTC is as follows (Table 4.9).

Table 4.9 Current manpower profile of BMTC

Category	Number
Drivers	4797
Conductors	5021
Technical personnel	1750
Administrative staff	1007
Traffic Supervisory	402
Total	12984

As in the case of DTC, traffic supervisors, drivers and conductors would have to be allocated amongst the bus operations. The technical personnel and all other repair and maintenance staff would have to be allocated to newly formed workshop company. Manpower for the workshop company would come out of the general administrative staff.

Using the same staff bus ratio as assumed in the case of DTC, the staff redeployment was estimated as follows. BMTC would augment its current city bus fleet of 2181 to absorb all surplus staff in the driver category and increase the number of buses that should be plied under the gross cost scheme so as to employ all the conductors. Finally, as in the case of DTC, the staff requirement of depot corporation was estimated using a norm of 30 persons per depot, given BMTC has 19 depots in the city. Based on the above, the staff required has been worked out in Table 4.10.

Table 4.10 Staff requirements for the proposed restructuring of BMTC

	Administration	Drivers	Conductors	Traffic sup	Technical	Total
Bus operations	732	4797	5021	445	0	10995
Depots and terminals	570					570
Workshop company					1757	1757
Total	1302	4797	5021	445	1757	13322

The increase in the number of buses that is necessary to accommodate the present surplus of conductors and drivers is given in Table 4.11. Compared to Delhi, BMTC would require greater efforts to augment its fleet, though this is still a relatively modest target given the total buses registered in the city (Table 2.10).

Table 4.11 Number of buses under BMTC for employing all drivers and conductors

	Number of buses	Additional requirement
City	2447	266
PO (KM Scheme)	168	64
Total	2615	330

However, unlike DTC, it emerges that there is actually a shortfall in the availability of administrative staff and traffic supervisors (Table 4.12).

Table 4.12 Shortfall under various categories after restructuring in BMTC

Category	Number
Traffic Supervisors	295
Administrative staff	43
Total	338

Thus BMTC would have to recruit more staff in these categories to operationalise the suggested strategies. However, if BMTC were to operate with the existing number of traffic supervisors and administrative staff, it would improve on the best staff to bus ratio in the country. One way of doing this is through greater use of information technology. It is reported that BMTC is currently in the process of computerising most of its administrative and traffic monitoring activities and this initiative should lead to further reduction in the shortfall in these categories (Box 4.6).

Box 4.6 Use of computer and Digital imagery for issuing passes to students

BMTC has started issuing the passes to students through computerized system. The advantage of this system is that students can walk in with an application form with due attestation and get the pass within a few minutes. In these centres digital cameras are connected with the computer nodes and a laser printer. As soon as the image of the candidate is captured, his particulars are fed in the computer. Then this passes containing all details along with the photograph. The printed pass is then laminated and handed over to the students within two minutes.

DTC has also started issuing bus pass for various passengers through computerised system. This is operated by a private agency. There are about 29 centres around Delhi. All these systems are centrally connected with wide area network. The advantage of this system is that any passenger can walk in take the pass within 5 minutes. All the cameras are connected with the computer system and a printer. Procedure for getting the pass is that passenger has to fill up the application form and should be verified by the DTC staff. As soon as the image of the candidate is captured, his particulars are fed in the computer. The printed identity card containing all details along with the photograph is then laminated and handed over to the commuter within five minutes. This is valid for a year. Renewing of pass can be done in any centre within two minutes.

In the category of technical personnel, BMTC currently has the best staff to bus ratio in the country. Thus, if the workshop company were to enter into an agreement with BMTC to service its entire fleet, the current number of employees in repairs and maintenance would be fully engaged. Also, if the workshop company became an authorised service stations of vehicle manufacturers, this staff to bus ratio could be further improved by servicing an even larger vehicle fleet.

5

Regulating public transport services

The restructuring of SRTUs, as suggested in Chapter 4, would help improve their financial performance. It would also help in conserving public funds for those activities that cannot be competitively rendered by the private sector. The induction of the private sector into the operation of buses would enable improved performance and make available additional capacity.

However, to bring about the required improvements and attract private investments in public transport, restructuring of the regulatory oversight in the sector would also be necessary. This chapter outlines the proposed regulatory oversight for the sector in light of the recommended restructuring.

Need for regulation

The restructuring of SRTUs alone would not be sufficient for bringing about a marked improvement in the quality of public transport that is desired. Some of the concerns that arise from the proposed restructuring are the following.

Regulating monopolies

In the event of greater private sector participation in the public transport sector as is being envisaged in Chapter 4, it would be necessary to institute appropriate regulatory oversight in the sector to ensure that competition tendencies in the private sector do not result in the dangerous passenger capture techniques as discussed in the case of Blueline buses in Delhi (Chapter 2). Also, it is being envisaged in Chapter 4 that the public transport services would be provided only by a single monolith organisation in the beginning and subsequently large corporate entities would be permitted to operate in exclusive zones. These entities would enjoy considerable monopoly power in the zones they operate in. Similarly, if private participation is being envisaged in commercial development of property, it is difficult to bring in many players to encourage competition in providing services within a given area, as such service providers would not enjoy economies of scale in providing parking facilities in depots for buses and terminal facilities for passenger interchanges. The activities of the above monopoly service providers would have to be regulated for protecting the interests of consumers. A strong regulatory framework, which would not only protect the interests of the investors, but also balance them with the public interest in general, would be called for. Such a regulatory framework has to be outside the existing Governmental set up, and should have an arms–length relationship with the Government as well as local bodies. Else, the requisite enabling environment which could ensure protection of consumer interests, generate consumer trust, ensure fair returns to utility, attract private investment in the sector, better delivery of services, and transparency in governance, would not be created.

Reducing transaction costs

Competition in the selection of the right to supply such services wherein many players can participate in bidding as discussed in Chapter 3 and suggested in Chapter 4 would result in an efficient outcome. This would result in competition for the market instead of competition in the market. The terms and conditions of such services are generally outlined through detailed contracts. If the contract period is short, it is possible to specify every aspect of contractual details. If it spans a long period of time, it is difficult to write 'time–consistent' enforceable contracts for the entire concession period covering all contingencies that may rise. Where tariffs and relevant factors cannot be unambiguously set out, there would be a need for mid–term reviews. Another fall out of greater private sector participation is the likely increase in transaction costs, which have to be mitigated. This strengthens the case for an effective regulatory framework.

Insulating from political risks

Public transport commuters constitute a large proportion of voters, and these services are perceived as essential function of the government. Hence it is often argued that public transport services should subsidised. These considerations often compel many public authorities to advance short–term political objectives rather than long–term interests of consumers. Investors are also aware of this type of pressures as well as the consequent vulnerability of their long–term investment. If there is weakness in the credibility of the commitment to the regulatory contract, the private entrepreneur deflects such risk by either increasing the cost of capital thus leading to higher tariffs or by compromising on the quality of service that is provided. Therefore, the need for credible commitment to the contractual obligations over the entire contract period is paramount while introducing private participation in public transport provision. An independent watchdog can provide such commitments to regulatory contract.

Need for independence

As governments or their instruments would continue to be major stakeholders in the public transport sector, the authority which aims to balance the interests of various stakeholders, including the government or local bodies, has to be independent of the government or local bodies. Independence in the context of regulation means that the authority with the 'expertise' should have all the attributes of autonomy so that it can apply its expertise in accordance with the mandate and subject only to its charter as laid out in the instrument through which it was set up and the laws of the land.

Instituting a regulatory authority

In India, regulatory reforms were initiated well after liberalisation of the infrastructure sectors in the economy. While, the power, telecom, and port sectors were thrown open gradually to private investment and competition, the need to regulate the entry objectively, and to establish a regulatory framework based on which private investment could be forthcoming, was not fully understood. Therefore, regulatory reforms were not contemplated as part of the initial reform process in these sectors. Only in the case of insurance sector, did the positioning of an autonomous regulator precede the introduction of the sector restructuring process. As a result, the initial design of the bidding process in the other sectors was faulty, the licensing conditions onerous and the bidding procedure defective. Government, which was the licensor and also the owner of the incumbent service provider, did not have the benefit of the advise of the independent regulator and appears to have been influenced to a large extent by the incumbent service provider in setting the terms and conditions of licenses.

In the public transport sector in India, there are at least two reasons why the regulatory reforms should be parallel to the proposed sector restructuring. First, there is a need to improve the operational efficiency of the public transport services to make them sustainable and eventually more attractive to the private sector. This would enable the expansion of the public transport sector to cater to a larger modal share even without private sector participation. Secondly, there is need to set standards of service, and enforce the same so as to improve the quality of public transport so as to encourage a modal shift towards public transport. The regulator should be able to take an independent view of this. Thus, it is desirable to position the regulatory oversight in the sector parallel to the sector restructuring.

Institutional alternatives

The international experience and regulatory reforms in other infrastructure sectors reveal that there are two major alternatives of institutional arrangements for discharging the above functions. These two alternatives essentially emerge from the manner in which these functions are allocated amongst different agencies.

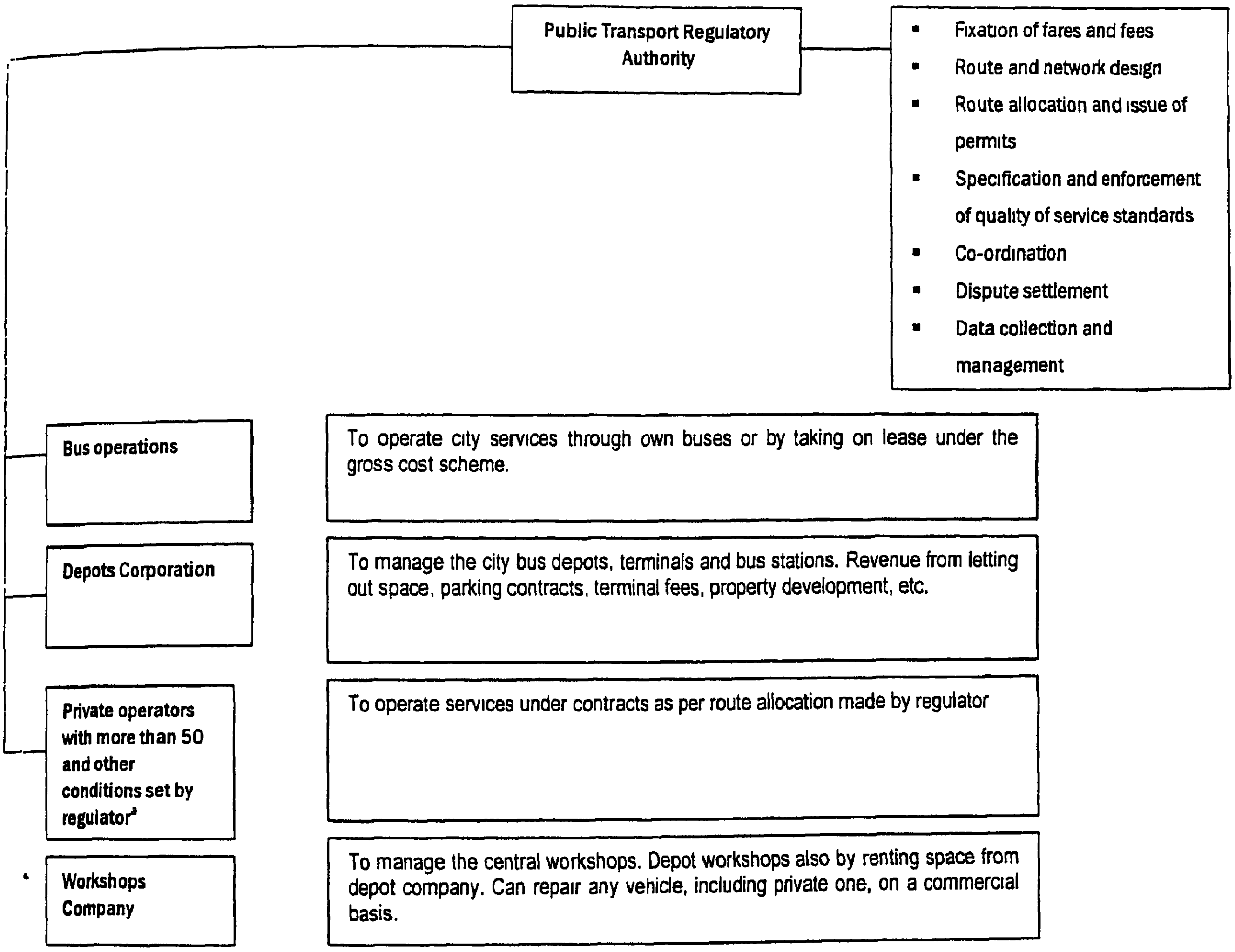
Independent regulatory authority

This alternative seeks to assign all these functions to an independent regulator through the setting up of a separate office of independent regulator. Setting up such an office will require that a fresh legislation empowering the regulator to discharge all these functions.

In this alternative the following functions would need to be discharged by the independent regulator.

- Fixation of fares and fees
- Route and network design
- Route allocation and issue of permits
- Specification, monitoring and enforcement of quality of service standards
- Co–ordination
- Data collection and management
- Dispute resolution
- Make recommendations to government on policy matters

This is broadly the approach that was adopted in Argentina (Annex A). A schematic of this arrangement is given in Figure 5.1.


Public Transport Regulatory Authority
Bus operations
Depots Corporation
Private operators with more than 50 and other conditions set by regulator[a]
Workshops Company

- Fixation of fares and fees
- Route and network design
- Route allocation and issue of permits
- Specification and enforcement of quality of service standards
- Co-ordination
- Dispute settlement
- Data collection and management

To operate city services through own buses or by taking on lease under the gross cost scheme.

To manage the city bus depots, terminals and bus stations. Revenue from letting out space, parking contracts, terminal fees, property development, etc.

To operate services under contracts as per route allocation made by regulator

To manage the central workshops. Depot workshops also by renting space from depot company. Can repair any vehicle, including private one, on a commercial basis.

Figure 5.1 An independent regulator[a]

Many of the above functions are currently discharged by the government and the STA/RTA, under the current Motor Vehicles Act, 1988 and the Road Transport Corporations Act, 1950. These will have to be entrusted to the Regulator. Since the Motor Vehicle Act is a Central Act, any legislation that seeks to modify any of its provisions would need the assent of the President of India. As the transport is a concurrent subject, there are two options here. First, a State Government may enact a legislation instituting a regulator and then seek Presidential assent. Second, the Central Government may enact a legislation enabling the setting up of independent regulators at the state level. Similarly, urban rail operations are presently administered by the Central Government under the Indian Railways Act, 1989.

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[a] As and when independent private operations are permitted in the sector

Strengthening the present regulators

Under this alternative, no independent regulator is envisaged. All the functions are split up between the STA/RTA and the SRTU. This alternative is akin to the approach adopted in London, with the London Buses Limited performing the functions that have been envisaged for the SRTU (Annex A).

The SRTU would be responsible for ensuring adequate services. It would have to take over all the professional functions of public transport planning, such as network and route design, route allocation, setting and enforcing quality of service standards, co-ordination amongst operators, data collection and management, etc. This would leave the STA free to discharge its larger role of regulating the rest of the road transport sector in the city. The power to issue permits could continue to rest with the STA/RTA, though this should be done on the recommendations of the SRTU. This requirement could be enforced by a government order and would not require any legislative amendments. A schematic of this arrangement is given in Figure 5.2.

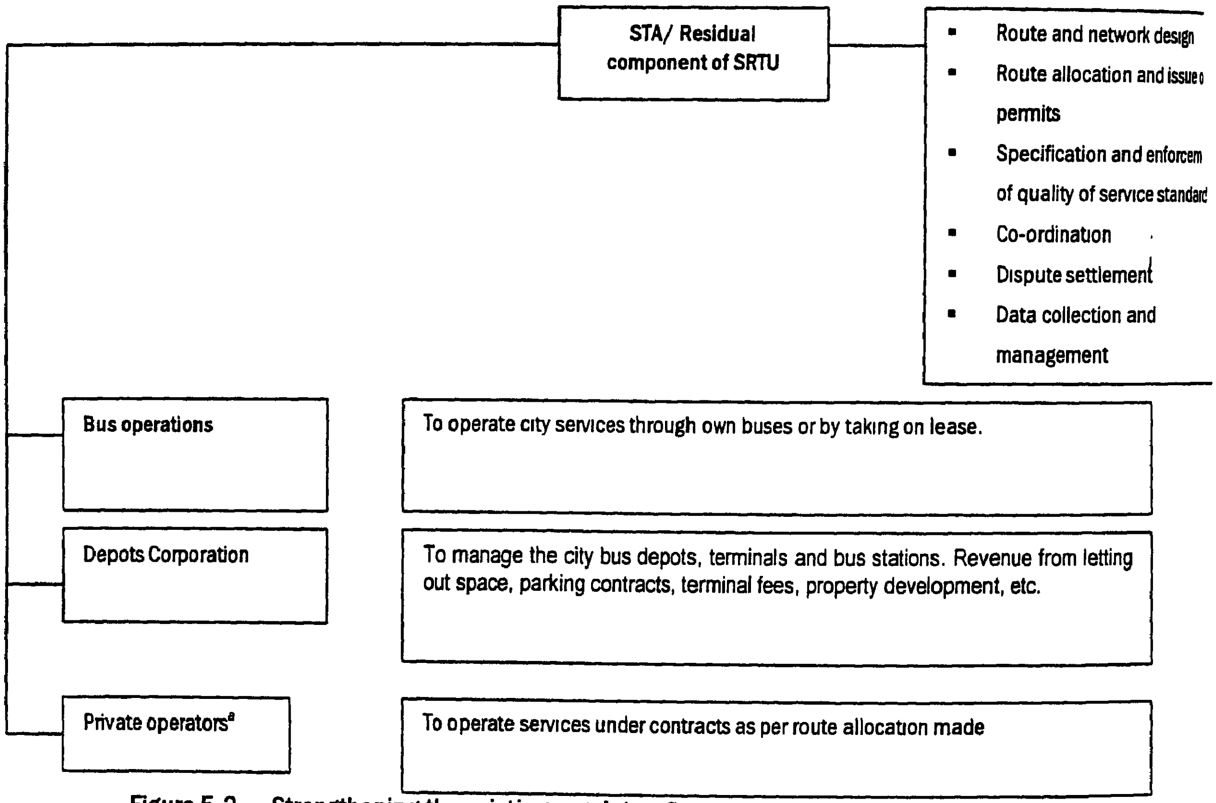
STA/ Residual component of SRTU
Route and network design
Route allocation and issue o permits
Specification and enforcem of quality of service standard
Co-ordination
Dispute settlement
Data collection and management
Bus operations
To operate city services through own buses or by taking on lease.
Depots Corporation
To manage the city bus depots, terminals and bus stations. Revenue from letting out space, parking contracts, terminal fees, property development, etc.
Private operators[a]
To operate services under contracts as per route allocation made

Figure 5.2 Strengthening the existing regulators[a]

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[a] As and when independent private operations are permitted in the sector

Relative merits of the two alternatives

In looking at the relative merits of the two alternatives suggested above, the independent regulator has the advantage of enabling professional transport planning and service provisioning functions to be discharged in a transparent manner and free from any undue interference. As discussed earlier, it would lend credibility if these were discharged by an agency that is independent of the political pulls and pressures that a government faces. It would give greater confidence to a private party to enter this market. It would be possible to effect better co-ordination and integration of public transport especially in cities such as Delhi where rail based transport systems are being commissioned. It would also enable the induction of appropriately qualified persons in public transport planning and would help in insulating the public transport system from short-term vested interests.

With regard the option of using the SRTU and the STA to discharge the functions suggested in this chapter, this would require co-ordination and integration, which is more difficult and complicated than setting up an independent regulator. This would become more acute in case of the introduction of rail based public transport such as being envisaged in Delhi. In addition, the objective of freeing the decision making process from political pulls and pressures is unlikely to be met. Under this alternative it would also be difficult to induct specially qualified people given the present government compensation packages.

As against the above, the advantage of no fresh legislation being required would perhaps weigh in the favour of strengthening the existing regulators. Also, since this alternative envisages only the strengthening of the existing regulatory agencies, the transaction costs and transition period would be considerably lower.

Recommended alternative

Taking into account the relative advantages and disadvantages of each of the alternatives, the setting up of an independent regulator would be best in the long-term interest of public transport in India. In cities such as Delhi, once the MRTS is commissioned, the existing STA/RTA and the DTC would have no jurisdiction over its functioning under the current laws and an amendment in them would be required in any case. If that be so, it would be appropriate to bring in the legislation now itself and have a regulator in place even before the MRTS begins operations. The regulator would then be able to play an important role in the design of the MRTS service parameters also.

Also, it is recommended that the Central Government enact a legislation enabling each state to institute its regulatory authority so as to ensure a degree of uniformity in regulatory oversight in the country. Also, given the scope of the regulator as defined in the following section, it may be appropriate for the Central Government to enact a legislation as some of the issues under consideration are central subjects.

However, it may take some time to get the requisite legislation passed. Hence, in the interim, and to get the requisite reform process moving, the existing regulators in the sector should be strengthened with an explicit commitment by the Central Government to establish an independent regulators at the state level at the earliest. This commitment should manifest itself in initiating the process of drafting and introducing legislation to this end immediately.

Scope of regulation

The three components in the public transport sector that are being restructured are the operation of buses, management of depots and terminals, and management of workshops. Out of this, the former two activities are envisaged to be monopoly activities – the operation of buses as it has been recommended in Chapter 4 that only large operators that are in a position to service an entire route or zone by themselves, and management of depots and terminals arising out of economies of scale. In addition, the operation of urban rail systems is clearly a natural monopoly arising out of economies of scale. Thus, these activities should be in the jurisdiction of the independent regulator.

The above monopoly service providers would be specific to each urban agglomeration. Nevertheless, it is reasonable to expect that the agencies that would manage these systems would cover an entire state. For instance, rail systems would be largely developed and operated by the Indian Railways. Similarly, each state usually has only one SRTU. Nevertheless, there are some SRTUs, such as in Delhi and Bangalore, which are largely urban operations. It is thus logical that the jurisdiction of the regulatory authority should extend over the entire state too. The segments of the public transport system such as operation of buses and rail systems, and management of deport and terminals, which have monopoly characteristics, should be subject to regulatory jurisdiction.

Regulatory functions

To achieve the desired improvement in quality of service in the public transport sector, and to protect the interests of the commuters in the event of greater private sector participation, it is necessary that several planning, licensing and monitoring functions should be performed in a scientific, well co–ordinated and systematic manner. The most important of these functions are the following:

- Fixation of fares and fees
- Route and network design
- Route allocation and issue of permits
- Specification, monitoring and enforcement of quality of service standards
- Co–ordination
- Data collection and management
- Dispute resolution
- Make recommendations to government on policy matters

Fixation of fares and fees

Currently, the government fixes the fares for bus services. These are usually done as a compromise between competing pressures from operators for an enhancement in the fares and pressures from commuters for not effecting any increase. Usually, the motivation for seeking enhancements in the fares is an increase in the input costs. Invariably, there is a time lag between such an increase in the input costs and the increase in fares. Besides, there is neither an agreed formula for the automatic enhancement of fares with increases in the prices of critical inputs like diesel, nor a periodic reassessment of the need for any increase in fares. As a result, bus fare hikes tend to be infrequent, ad–hoc but steep. Thus, the entire system of the fixing fares is unscientific and guided more by political considerations than by economic considerations. However, it is reported by BMTC that an automatic fare revision formula has been instituted with the approval of the State Government as described in Chapter 3. Also there is no co–ordination tariff design between urban bus and rail systems though some initiatives are planned in Delhi as discussed in Chapter 4.

Such a state of affairs is not conducive to the healthy operation of public transport services by private operators. It is necessary to have a system under which the fixation of fares is done on economic considerations rather than be guided by political considerations. It would make the decisions more credible and facilitate private investment in the provision of public transport. Also, certain services such as the provision of bus depots and terminals would continue to be provided in a monopolistic market. Being in a monopoly position, it is necessary that this market power is regulated in the best interests of commuters. This would be possible only if there is an agency, independent of the political decision making process, to undertake this task. The scope of tariff regulation of the independent regulator should extend to all the three activities identified, namely, bus operations, rail operations, and management of depots and terminals. This issues in tariff design are discussed in greater detail in Chapter 6.

Route and network design

It is necessary for a public agency to ensure that there is adequate coverage of public transport. As described in Chapter 3, the international experience reveals that if left entirely to a commercial organisation, which has profit as its primary motive, only those routes that are commercially viable would be served and those that are not commercially viable would be neglected. Similarly, the profit motive would only permit services during peak periods and would discourage services during off–peak hours. As against this, the universal service obligation requires that services be available during off–peak periods as also on the relatively less profitable routes.

At present, there is no systematic exercise for network and route design. The precise allocation of the responsibility for route design is also unclear. In Delhi, the DTC identifies the routes on which it would operate services, while the routes for Blueline buses are determined by the STA largely on the basis of existing DTC routes. Thus, the responsibility for route design is split between the DTC and the STA. Quite often, these routes are decided on the basis of public pressure and not on the basis of a scientific assessment of the demand. This could result in a sub–optimal allocation of routes, with surplus capacity on some and a deficit in others. Also, MRTS network development was independent of the DTC bus network. In Bangalore, as the entire public transport sector is nationalised, the route and network design functions have been delegated by the STA to the BMTC. It is reported that a route rationalisation exercise is currently underway in Bangalore (Box 5.1).

Box 5.1 Route rationalisation initiatives

It is reported that an extensive route rationalisation exercise is currently underway in Bangalore to redesign routes based on a direction oriented approach as opposed to the destination oriented approach that is being followed. On the basis of this, it is expected that the number of routes would come down from the current 326 to 8.DTC has also instituted a dedicated group for carrying out origin destination surveys on a continues basis for periodic rationalisation of routes.

It is necessary that a periodic assessment of the demand be made, on a scientific basis, over the entire network. This assessment should form the basis for allocation of routes amongst operators and the level of service required.

Apart from this, the scientific design of the transport network, and of individual routes within that network, requires specialised skills that would not be available at normal government salaries. It would therefore be necessary for an agency outside of the government set up to discharge this responsibility, if necessary by procuring the requisite skills. This agency would determine the route and network design for both urban bus and rail systems. This issues in network design are discussed in greater detail in Chapter 8.

Route allocation and issue of permits

As already mentioned in the earlier chapter, bus services are currently being provided by both by DTC and also several private operators. DTC either uses its own buses or hires them from private bus owners. Private operators run services on the basis of permits issued to them by the STA. These are the Blueline services and tend to operate in competition with DTC buses.

The system of allocating routes amongst operators is not scientific. The usual practice is for an operator to apply for a permit on a particular route. If the STA finds the application to be in order and is of the view that an additional service could be provided on this route than the permit is given. The procedure is not transparent and there is a scope for undue pressure to grant permits that are otherwise not deserving. There is no mechanism for an apriori assessment of the demand on various routes as also a scientific projection of the quantum of service required on each route. It is necessary that such an assessment is made at periodic intervals, in a scientific manner, and route permits be given only after such an assessment has been made. It is also necessary that the issue of route permits be done in a transparent manner. Unless this is done, it will be difficult to have a well co-ordinated system. This exercise has to be carried out by an agency that has the necessary skills, or can procure them. It would also be best if these decisions are taken independently of political considerations.

Once the demand and supply requirements on individual routes have been assessed, it is necessary to have a well–designed and transparent system of allocating routes amongst operators. Such an allocation needs to be done in a fair and equitable manner, not only to ensure adequate coverage on each route but also to ensure a reasonable return to each operator. Some agency needs to decide who would be the best placed to operate buses on a particular route and what would be the best terms on which such services should be obtained. As described in Chapter 3, several cities around the world, including London, have adopted the practice of competitive bidding for route allocation.

All of this can be best done by an agency other than one of the operators and one that has the necessary skills to perform these functions in a scientific manner. It would also be preferable if such an agency is independent of the political decision–making process so that it is guided by proper economic considerations and the principles of sound transport planning rather than by political or other extraneous considerations. This issue is discussed in greater detail in Chapter 8.

Specification and enforcement of the quality of service standards

Quality of service in public bus transport essentially comprises of parameters such as the following:

- safety record
- punctuality record
- number of scheduled trips missed
- cleanliness and upkeep of vehicles
- behaviour of operating staff

Being guided by the profit motive, a purely commercial operating company would tend to reduce costs by compromising on quality and safety. At present, quality of service standards are set and sought to be enforced by the STA through including these as a part of the permit conditions. However, these are again not done in a well–planned and scientific manner. There is no review of these conditions to determine if any changes are required. Setting the quality of service standards is a specialised task, requiring a good understanding of passenger behaviour and operational constraints. It would, therefore, be an advantage to have a specialised agency to lay down the quality of service specifications, on a scientific basis. These could then be incorporated as part of the permit conditions, duly monitored, and enforced by a regulator. This issue is discussed in greater detail in Chapter 7.

Dispute resolution

In the present set up, the quasi–judicial dispute resolution mechanism is ineffective. All disputes between the operators, and between licensing authorities and operators, are resolved through the Motor Vehicles Act 1988 (Section 89 – 90). This allows for the formation of a tribunal, the State Transport Authority Tribunal, which shall consist of a judicial officer of the rank of at least a District Judge. The efficacy of such a process is doubted as in most cases, the tribunal consists of the Secretary of the STA. Thus most disputes can be resolved only through a judicial process. Disputes between the SRTU and the licensing authority that may come up are essentially internal to State Government and are resolved within the management of such an organisation.

However, under a restructured set up as suggested in Chapter 4, with the introduction of new service providers, there will be many players in public transport sector. Thus the disputes could be between different operating agencies or even between the operating company and an infrastructure provider like such as the depot corporation. It would be very time consuming if all such disputes were to be settled only through the mechanism of the judicial courts. While individual concession contracts such as those for the gross cost scheme would invariably incorporate a provision for dispute settlement between an operator and a regulatory agency, a framework for adjudicating disputes amongst different service providers is essential. Further, such fora must also address consumer issues, especially quality of services. It would be best to have a separate agency that could arbitrate on such disputes and provide a mechanism for speedy remedies.

Other activities

Some of the other activities that the Independent regulator could undertake on being directed by the government so as to facilitate co–ordinated development of the urban transport sector are the following.

Co–ordination functions

With several operators providing services throughout the city, it would be necessary to co–ordinate on several activities. For example, city bus services may require having a system of passes or a common ticket that would entitle passengers to use the services of different operators. In such a case it would be necessary for some agency to co-ordinate the proper sharing of revenues from such common tickets or passes. This would become even more complex if a common ticket or pass is available for use on different modes of travel within a city, a distinct possibility in Delhi once the MRTS becomes operational. Further, as a matter of policy, the government may offer a concessional travel facility to certain segments of passengers. Among them could be students, the physically handicapped, senior citizens, etc. The cost of such concessional travel should rightfully be borne by the government and should not be added to the cost of operation. A separate agency would need to determine the principles for channelling subsidies to the different operators in proportion to the extent of concessional service rendered by them. In this regard, as mentioned in Chapter 4, DTC and DMRC are considering setting up a special purpose vehicle to carry out such co-ordination activities between public bus and rail services. Here it may be necessary to expand the scope of this entity to enable it to co-ordinate public transport services between all operators, as well as other modes. Nevertheless, the regulatory oversight for this entity should be provided by the independent regulator.

Finally, regulatory agencies would be required to interact with other regulators in the sector such as the pollution control boards, the State and Central Governments, etc.

Data collection and management

As stated above, scientific planning requires the availability of reliable data, which should be collected on a regular basis and maintained in systematic manner. At present, adequate data for scientific planning for public transport is not available in the city. Quite often, some of the data collected as part of specially commissioned studies is used for planning purposes. However, such data does not lend itself to any kind of trend analysis and is inadequate for planning purposes. Apart from this, a good public transport system requires that there is a comprehensive passenger information system, which incorporates data on the services provided by all the operators. It would be very clumsy if each operator maintained his own passenger information system without a proper linkage to similar information of other operators. A specialised agency is therefore necessary for proper data collection and management. This issue is discussed in greater detail in Chapter 7.

Advise Government

Comprehensive management of the entire transport sector is key to ensuring that distortions such as the one in modal shares are not exacerbated. In this regard, integrated planning for infrastructure in the transport sector is important. However, there is no single authority in the urban transport sector that ensures integrated development of the sector. In fact, no state in the country has an urban transport policy.

In making its policy decisions such as the ones outlined above, the government would benefit from recommendations made by a professional agency. This agency needs to have the required skills and expertise, or procure them at market based fees, to render sound advice to the government. The role of the regulatory agency has to be defined in a broader context as well. Conservation of scarce resources and managing the sector to achieve the proper balance between societies' needs and the environment are some issues required to be addressed.

Regulatory framework: design issues

The design of a regulatory authority is fundamental to the efficient functioning of the regulatory authority[a]. It is also essential for ensuring that the regulatory agency is able to fulfil the objectives that it was set up for, namely protecting the interests of the consumers and the private sector in an industry that is predominantly government managed. The three elements here are autonomy, independence, and accountability of the regulatory authorities.

Autonomy

A regulator should enjoy some degree of freedom to effectively discharge its duties and its autonomy has to be guaranteed by law. This independence, however, cannot be absolute and should be subject to the laws of the land and the policy of the government. The following are some parameters that have been considered essential to ensure the autonomy of a regulator:

- Transparent selection process
- Well laid–out qualifying and disqualifying criteria
- A prescribed tenure
- Capability of the regulator to access expertise without seeking the government's approval
- Authority to incur expenditure without the government's prior approval

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[a] This section draws largely on the regulatory reform experiences in other sectors and countries and the framework suggested in Sundar and Sarkar (2000).

- Criteria for removal

Some of these parameters are discussed below.

Transparent selection

There are different approaches being adopted across the world on the issue of an effective selection process. The executive and the legislature jointly decide the appointment of regulators in countries like USA. In the UK, the executive selects the water regulator. In India, in the power sector like in Gujarat, a committee prepares a panel of names of regulators at the first instance for consideration by the executive. In India's telecom sector, it is left to the executive to appoint the regulator. Ideally speaking, a regulator should be chosen through a transparent process for attracting the best available expertise in the field. A committee may prepare a panel of names and the government should make the appointment of members of the regulatory authority.

Prescribed tenure

In most countries, members of a regulatory authority enjoy fixed but staggered tenures. However, the issue whether the regulator should be eligible for re-appointment has been dealt with differently in different countries. For instance, in USA and Argentina the regulators are eligible for re– appointment. In India, many statutes are silent on the issue. Considering that the expertise gained over a period of the tenure in the authority could be effectively utilised further, there is a case for the members being made eligible for re–appointment through the prescribed selection process along with the other candidates. Tenure of members of all the regulatory authorities in the electricity sector in India is five years, while it is three years in telecom sector. However, the upper age limits between members and the chairperson should be made uniform.

Removal of regulators

Whenever a regulator is required to be removed from the office, it should be on stated grounds, and the process of such removal should be transparent. While the government should be the authority for removing a regulator, it should do so on the advice of an independent authority such as the High Court, State Public Service Commission, etc.

Financial and organisational autonomy

The degree of financial and organisational autonomy of various regulatory authorities varies in India. For instance, the TRAI (Telecom Regulatory Authority of India) has been allowed to levy fees and charges and to set up its own fund whereas the CERC (Central Electricity Regulatory Commission) is wholly dependent upon the government for funding, although CERC funds are charged to the Consolidated Fund of India, but not voted. The CERC also requires the government's approval for the creation of posts. Further, in Orissa, (in the case of OERC [Orissa Electricity Regulatory Commission]) the government's approval is required for the creation of posts, although the expenses can be charged to the consolidated fund of the State.

The regulatory authority should be able to hire expertise independent of the government's approval. The salary structure of such staff should be determined by the regulator in order to attract the best expertise and it should not be subject to government control.

There are two distinct methods available for dealing with the funding mechanism of a regulator, namely earmarked funding from the government budget or a levy from the consumers indirectly through the regulated utilities. In India, since the concept of funding a regulator through a 'charged' budget has not eliminated the interference of the executive, a case lies in setting up a 'Regulatory Fund' for the regulatory authority. The fund can source grants from the government in the initial stage and fees thereafter. There should be a cap on the levy fees, which may be fixed by the government.

Accountability

An autonomous regulator must be accountable for its actions. It should balance the interests of stakeholders in a fair manner and not protect the interests of certain groups to the detriment of others. Clear rules, an open regulatory process, and reasoned decisions alone can ensure transparency and accountability. This would imply that the regulatory process should be such that all potential stakeholders are aware of the regulatory process and have an opportunity to present their views freely and frankly. Regulatory legislations in India's electricity sector have mandated that the regulators shall ensure transparency while exercising their powers and discharging their functions.

Regarding the nature of the decision–making process, two distinct models are in vogue – consultative and quasi–judicial. The consultative process should be encouraged as it provides for a comprehensive discussion of issues with different stakeholders, and is therefore less costly and less time–consuming. In formal hearings, which are based on written submissions, there is a danger that the discussion may become adversarial rather than consultative. However, there are some areas such as dispute settlements and award of compensation to consumers that necessarily have to be resolved through a quasi-judicial process. Each approach should therefore be clearly delineated.

An appeal against a decision must be to an independent body and must be on a question of law. The appellate authority should not deal with the substance of the regulatory decisions unless the evidence presented or the procedure adopted shows that regulatory decisions are unreasonable. The appellate authority could be the High Court or a Tribunal with quasi-judicial powers.

In addition, there should be a legislative scrutiny of the regulator's activities, as well as external scrutiny by, say, the C&AG (Comptroller and Auditor General) of India of the regulator's accounts and expenses. However, the extent of legislative scrutiny has to be clarified. The Annual Report on the regulatory activities should be tabled before the legislature. And the legislature should refrain from any substantive discussion on regulatory decisions, which have been arrived at through a transparent as well as consultative process. Similarly, care should be taken to ensure that external scrutiny by the C&AG should not also extend to substantive regulatory decisions, but be restricted to accounts and expenses incurred by a regulator.

Independence

Regulatory independence is the most debated subject in the regulatory community. As, the proposed regulator in the urban transport sector is required to effectively discharge its duties under the statute and for the purpose, it should enjoy some degree of freedom for its functioning. Its autonomy has to be guaranteed by law. Regulatory independence may mean that regulators should have:

- an arms-length relationship with regulated firms, consumers, and other interests
- an arms-length relationship with political authorities
- organisational autonomy

Independence, in this context, should mean that the regulator should have all the above attributes and, in addition, the autonomy to apply its expertise in accordance with its mandate. At the same time, it should be subject to the laws of the land and the policies of the government. Such autonomy can best be ensured if the regulatory authority is created through enacting regulatory legislation that clearly mandates and stipulates conditions under which the regulator should work.

Relations among regulators

The literature on regulation generally puts all regulations under three categories – economic regulation, which deals with intervention in market decisions such as pricing or entry, social regulation, which seeks to protect such public interests such as the environment, administrative regulation, which deals with government intervention for collecting information and prevailing in individual economic decisions (OECD 1997). Besides defining the role of the regulators in overseeing the market decisions, economic regulation should also clearly define the regulator's role in such non–economic areas as safety, conservancy, and environment.

Also, given the federal structure of governance in India, there are regulatory issues that relate to both the central and state level regulators in some sectors. This adds another dimension to the scope and relationship between regulatory agencies in India. In sectors such as transport where the jurisdiction of the centre and the state overlap, the role of the regulators should be well defined and complementary. The overlapping areas of operation should be identified and spelt out in the regulation as far as possible and not be open to alternative interpretation. In addition, with the emergence of many state regulators, sectoral co–ordination at the national level should be ensured.

Powers of the authority

In areas where issues are required to be resolved through adjudication, the regulator should be deemed to be a civil court and a quasi–judicial authority. It would require to have the authority to summon and enforce attendance, require disclosure and production of documents, receive evidence on affidavit, review its decisions, etc. For discharging its functions, the regulator would also require to have the powers to call for information and conduct investigations. Further, it would require sufficient powers to prosecute for the contempt of the lawful authority of a public servant, for offences against public justice, and for offences relating to documents given as evidence. The regulator, being a quasi–judicial body, would require to have the powers to pass interim as well as final orders. In the first instance, it may make an interim order and may reserve its decision pending further proceedings. The orders and directions of a regulator must be enforceable in a court of law. In addition, every order passed by the authority should be deemed to be the decree of a civil court and be executable as such. If the directions or orders of the authority are violated, the violation should be adequately punishable with suitable fines.

Policy directions of the Government

In India, the government's approach to statutory regulation is based on the notion that a regulator, while being autonomous, should be accountable for its actions and should also be subject to the policy of the government. The policy directives of the government should conform to the objectives of the relevant regulatory legislation. These directives should relate to policy and not to administrative and technical matters. Whenever the government decides to issue policy directives, it must consult the autonomous regulator before such directives are issued. It is equally important that the directives issued and reasons behind them should be made public. However, in case of dispute, the government decision should be final.

Summary of recommendations

The setting up of an independent regulator for the public transport sector in India is recommended. Also, it is recommended that the Central Government enact a legislation enabling each state to institute its regulatory authority. The segments of the public transport system such as operation of buses and rail systems, and management of deport and terminals, which have monopoly characteristics, should be subject to regulatory jurisdiction. The proposed activities of the regulator are the following.

- Fixation of fares and fees
- Route and network design
- Route allocation and issue of permits
- Specification, monitoring and enforcement of quality of service standards
- Co–ordination
- Data collection and management
- Dispute resolution
- Make recommendations to government on policy matters

Since, it may take some time to get the requisite legislation passed, the existing regulators in the sector should be strengthened with an explicit commitment by the Central Government to establish an independent regulator at the earliest.

6

Issues in tariff determination

As with other utility services, public transport operations, including fare administration, are subject to meeting the universal service obligations. Hence, fixing fares for public transport is a complex issue. Also, the public transport sector is largely nationalised and thus activities such as fare fixation are not insulated from political interference. Public ownership has also implied that the SRTUs are not being compensated for meeting universal service obligation through strategies such as uneconomical routes etc. Simultaneously, the gradual liberalisation of the auto industry in the 1980s, has resulted in a shift away from public transport. This presents another concern since any increase in tariff would lead to further erosion of the ridership in public transport. For instance, the fare increase announced in Tamil Nadu in December 2001 aimed at 41% additional revenue actually resulted in a 20% increase due to fall in ridership. Apart from the financial viability of public transport, this fall in ridership has implications for increasing congestion, pollution, and fatalities in the transport sector.

Thus the sector faced with a unique challenge where fare increases are constrained by the modal shift leading to loss in traffic and political interference in tariff setting. Simultaneously, fare increases are considered to be necessary to ensure financial viability of the sector. This chapter addresses some issues in tariff setting in the public transport sector and suggests directions for change.

Issues in tariff setting

Tariff fixation is vested with the state governments under Section 67(1) of the MV Act 1988. As discussed earlier, political interference in the tariff setting has lead to the fares not reflecting costs. Also, the tariff setting process is not transparent and scientific. Bus fares in India by and large follow the multi state fare system, wherein the tariff is based on the distance travelled. For instance, DTC has a four-stage system. The fare stages in some large metropolitan cities in India is give in Table 6.1

Table 6.1 Public transport fares in India

Km	Delhi	Mumbai	Chennai	Kolkata	Bangalore	Hyderabad
1	200	300	200	250	100	250
2	200	300	200	250	100	250
3	200	300	200	250	100	250
4	200	300	200	250	200	300
5	400	400	300	250	300	300
6	400	400	300	250	300	375
7	400	500	300	300	300	375
8	400	500	300	300	300	400
9	600	500	350	300	350	400
10	600	600	350	300	350	475
11	600	600	400	300	350	475
12	600	600	400	300	350	500
13	* 800	600	400	300	350	500
14		600	400	300	350	575
15		900	450	300	400	575
16		900	450	300	400	600
17		900	450	350	400	600
18		900	450	350	400	675
19		900	500	400	400	675
20		1000	500	400	400	700
21		1000	500	400	450	700
22		1000	500	400	450	775
23		1000	550	***	450	775
24		1000	550		450	800
25		1100	600		500	800
26		1100	600		500	875
27		1100	600		500	875
28		1100	600		500	900
29		1100	600		550	900
30		1200	600		550	975
31		1200	600		550	975
32		1200	600		550	1000
33		1200	600		600	1000
34		1200	600		600	1075
35		1300	650		600	1075
36		**	650		600	1100
37			650		650	1100
38			650		650	1175
39			650		650	1175
40			650		650	1200

* 800 paise for above 12 km

** 200 paise for every additional 5 km or part thereof.

*** On subsequent stages an increase of 100 paise on existing fare up to 50 km and Exceeding 50 km an increase of 125 paise shall be permissible.

Tax structure for public transport

Vehicle taxation in India is a state subject. The taxation policy pursued by the States on the passenger road transport system is lopsided with road transport taxes considered as revenue generating measures rather than means to influence modal choice. An analysis of incidence of tax in different states reveals that the taxes levied in the southern region is about Rs 0.1 million per annum, Rs 0.2 million per annum in the western region (Maharashtra, Gujarat and Rajasthan), Rs 50 000 in the eastern region, and Rs 0.35 million in the northern region. It would appear that where the passenger transport is largely in private sector, the rates of taxation are the lowest as in the case of Bihar, Orissa, Assam, West Bengal and Madhya Pradesh. As the monopoly of the public sector increases as in Western and in the Northern States, the taxation is high. In addition, some states have a dual taxation policy, that is, the tax on the state government owned SRTUs is high and for private operators is lower, as in Uttar Pradesh. Hence, public transport taxation has been used as a means to raise resources for the exchequer rather than influence modal choice.

Efficiency

The efficiency and effectiveness of the bus transport system are reflected in the delivery of services and the cost of service delivery in the following manner.

Operating Revenue = (Number of buses in the fleet)*FU *BU*
(Seating capacity of the bus*OC)*Fare

Where

- Fleet Utilisation (FU) expressed as a percentage of buses operated to held in the fleet
- Bus Utilisation (BU) expressed as km performed per day
- Occupancy Ratio (OR) expressed as a percentage of occupied seat km to total available seat km

The Fleet Utilisation is the most visible parameter providing rough and ready measure to estimate the efficiency and productivity. FU depends upon the age of the fleet, maintenance standards, bus procurement and replacement policies and practices, availability of spares and skill of the labour. The influence of FU on cost is described in Table 6.2.

Table 6.2 Impact of fleet utilisation on operating costs

Fleet utilisation	85%	90%	95%
Loss (Rs million)	0.28	0.18	0.08
Rs per km @80,000 per bus per year	3.53	2.22	1.05
Rs per pkm @ 90% OC	0.07	0.05	0.03

As can be seen from Table 6.2, as the fleet utilisation increases from 85% to 95%, assuming a annual utilisation of 80 thousand kilometres for a bus and an occupancy of 90%, the capital cost per kilometre falls by over 50%.

However, it has been reported that high FU can be obtained by out-shedding buses but not operating the designated trips, operating the same bus on different routes, and withdrawing the bus for repairs immediately after the first trip etc. Hence, this parameter has to be measured in conjunction with others like Bus Utilisation. World Bank (1987) observed a bus utilisation of about 130 km per day in developed countries and 220 km in developing countries. In India, the average urban bus utilisation is about 220 km per day. With rising congestion, the vehicle utilisation is likely to decline. Comparing India's performance with urban transit systems in a number of developing and developed countries reveals that, for a reasonably well run company a fleet utilisation between 80 and 90% was reasonable. An analysis of the fleet utilisation in the SRTUs shows that maintaining 90-92% of fleet utilisation is achievable and could be treated as standard. Private operators could improve this to 95-97%. It is also necessary that operators deliver the actual services planned. Any fall in kilometric efficiency, that is, the ratio between the operated trips and the scheduled trips or operated kilometres and the scheduled kilometres, would reveal the level of the reliability of services in the fleet. World Bank (1987) had suggested a norm of 90-92% in kilometric efficiency. The Indian average performance is about 88% in metros.

Personnel policies in SRTUs

In India, in the organised sector, including the Government owned SRTUs, the wages mandatorily include components like dearness allowances linked to the All India Consumer Price Index, house rent, health, city compensatory, attendance allowances, contributions towards provident fund, gratuity, etc. In the unorganised sector, including private bus operators, most of these conditions are not operative. The officially approved monthly wages effective from August 2001 applicable to Public Motor Transport in Delhi are Rs 2592 for helpers, Rs 2758 for conductors, Rs 3016 for drivers and skilled mechanics and

Rs 2785 for clerical staff (Ref: Order No.F-12 (142)/98-MW/LAB/511 dt.28.9.2001). In addition, Section 34 of the RTC Act, 1950, empowers the State Government to give instructions relating to the recruitment, conditions of service and training of its employees, wages to be paid to the employees and reserves to be maintained by it. Such statutory obligations have increased the cost of labour to disproportionate levels compared to the private operations. Thus, the private bus operator is able to make sizeable profit in a route in which the SRTU incurs heavy loss.

To estimate the impact of costs of manpower, the following exercise was carried out. Taking the current staff to bus ratio in DTC as nearly 8 persons per bus (DTC 2001), with the average wage rate of Rs 9000 per month, the cost to each commuter is about Rs 0.24 per km. A private bus on the other hand operates with about 4 personnel and, as can be seen from above, pays an average of Rs 3000 per person month, and costs far lower.

Table 6.3 Impacts of manpower costs on operations

	DTC	PO
Staff per bus	7.68	4
Average wage rate	9000	3000
Total labour cost	69120	12000
Rs per pkm	0.24	0.04

Meeting the universal service obligations

Since the beginning of 1980's, the State Governments have increasingly used the SRTUs to cater to specific constituencies, such as students, blind, freedom fighters, members of legislative assembly, journalists and senior citizens etc by providing subsidised services, apart from operating uneconomical routes. During 1999/2000, the value of such subsidies accounted for Rs 9.44 billion against which the state governments reimbursed Rs 2.52 billion. During the same year all STUs put together incurred a net loss of Rs 21.97 billion after payment of Rs 15.42 billion as taxes.

Principles for rational tariff design

Tariff determination is the primary tool available for creating an enabling environment for dynamic and sustainable growth in the transport sector. The fundamental principle of tariff determination is to ensure that prices lead to an optimum level of investment, operation and demand in the sector. The principles that need to be considered while designing the tariff are detailed in Table 6.4. Some of these are discussed subsequently.

Table 6.4 Principle for tariff determination

To promote efficiency and economy in the activities of the sector	- Only reasonable costs of operation will be allowed to be recovered from the commuters. - To provide incentives through tariff for good performance and for improving the quality of supply and service to the consumers. - That the tariff will be designed in a manner to promote an optimum level of travel demand.
To secure the financial viability of the entities in the sector	- The utility will be entitled to recover all reasonable costs incurred in operating and maintaining the service. - The investors will be assured of recovering the capital costs including a reasonable rate of return on the investment.
To provide incentives for optimum investment	- That the tariff structure and design will be such that it attracts the necessary investment to the sector.
The tariff should reflect the cost of supply	- That the consumers, to the extent possible, will pay according to the cost incurred in providing supply and service. Wherever the government wants a certain group of consumers to be subsidised, it will make a corresponding allocation from the State budget
The tariff should be fair, just and non-discriminatory	- That the tariff would not discriminate against any consumer(s) so as to burden them with unjustified costs.
The tariff structure will be unbundled to reflect the cost of providing different services	- To the extent possible, the tariff structure would be unbundled i.e., cost of providing different services will be shown separately.

While the following provide guidelines on tariff setting, it should be recognised that there may be a conflict between the different objectives that are sought to be achieved. For instance, increasing the share of public transport and issues of social sustainability would require that the fares be kept sufficiently low, while efficiency improvements and viability issues may require periodic fare increases. Thus, it is important for the regulatory agencies in this sector to balance these objectives so as to achieve a sustainable outcome. Similarly, to ensure that the overall objective of increasing the share of public transport meeting the travel demand is met so as to achieve environmental and social sustainability, it may be necessary to subsidise public transport operators.

Demand for public transport services

As mentioned in the beginning of the chapter, increases in bus fares could lead to loss in ridership to private modes. This phenomenon has been accentuated after the liberalisation of the automobile industry. Thus bus fares would have to be benchmarked on the cost of alternative modes of transport to ensure that the modal shift highlighted in Chapter 2 is checked[a]. Similarly, buses are considered to have a pro poor image in the sense that the economically challenged sections of the society are a captive market for the public transport operators. Hence, to address issues of social sustainability, it is imperative that the fares be kept sufficiently low to cater to such commuters.

Efficiency improvements to reduce costs

As mentioned in Table 6.4, the tariffs should provide incentives for efficiency improvements so as to reduce costs of operation. The discussions in the earlier sections emphasised the need for improvements in bus operations and highlighted the implications for operating costs. For instance, a 10% improvement in fleet utilisation would result in a reduction in operating costs of over 50%. Finally, it is imperative that external costs such as congestion and pollution should be incorporated in the fare determination process so as to reflect the true economic value of the service delivered.

Subsidy administration

Wherever the government desires that a particular class of consumers be provided public transport services at subsidised fares, it is recommended that the allocation for the same should be made explicitly by the exchequer. Subsidies may also be merited in case public policy demands that fares be kept low so as to ensure that the share of public transport is increased. Nevertheless, the need for subsidy should be assessed rather than just assuming that it exists, because the inclusion of unintended beneficiaries reduces the efficiency of the subsidy and increases the burden on the taxpayer. It is important that the subsidies be well targeted and the inclusion criteria be such that it minimizes unintended beneficiaries. A proper assessment of the subsidy need and the willingness and capability to pay is required.

Fare revisions

As mentioned in Chapter 5, the present fare revision process is not transparent and unscientific. Fare revisions are usually a compromise between competing pressures from operators for an enhancement in the fares and pressures from commuters for not effecting any increase. Invariably, there is a time lag between such an increase in the input costs and the increase in fares leading to delays in fleet augmentation and replacement and thus poor quality of service. However, for improvements in the service quality fare revisions should be rationalised and made systematic. One such process is described in Box 6.1.

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[a] In addition, to ensure that the modal shift towards personal vehicles is checked, the quality of public transport has to be improved, apart from retaining their cost competitiveness. This issue is discussed in greater detail in Chapter 7.

Box 6.1 Fare fixation in public transport

The Association of State Road Transport Undertakings (ASRTU) found that the cost of labour and that of fuel formed the major cost elements, which when not properly reflected in the fare structure caused serious financial imbalance in the STUs. The ASRTU advocated a policy to empower the STUs to automatically revise the passenger fare as and when the diesel price was increased and to adjust the increase in the dearness allowances in the wage component on a yearly basis. It also formulated a fare adjustment formula keeping the base date as 1st April 1998. At a base diesel price of Rs.10.28 per litre, fuel efficiency of 4.63km per litre, seating capacity of 55 and load factor of 75, ASRTU arrived at a formula of $18\text{paise} + [(RP \div BP) \times 5.4]$

where RP is Revised Price and BP is Base price of diesel as on 1.4.98

or the diesel cost $D = (10.28) \div (S \times L \times KMPL)$ and the diesel price adjusted fare

$Fdpa = (F - D) + [(RPD / BPD) \times D]$

where RPD is revised price of Diesel and BPD is Base price of diesel on 1.4.98.

Similarly for annual revision of Dearness Allowance(DA) the ASRTU has suggested a model by which it arrived at an increase of one paise in passenger fare for every 12 point increase in DA, based on the neutralisation point of 16. $(\text{the revised Central DA point} - 16) \times W$, where $W = 1000\text{paise} \div (BU \times S \times L)$ where S is the average number of seats not less than 55 and L is the state average load factor and staff ratio of 7.5 per bus. The State Governments in Uttar Pradesh, Karnataka, Maharashtra and Rajasthan have authorised their STUs to automatically adjust the fares based on this formula with minor variations, up to 10% of the fare during a year without the approval from them. However, this formula does not allow for efficiency improvements.

7

Quality of service standards issues

As highlighted in Chapter 1, the objective of this report is to suggest strategies by which public transport operations in urban agglomerations in India are efficiently provided so as to check the increase in the share of private modes. However, this would depend not only on the financial viability of the SRTUs and thus the supply of public buses to the city, but also on the relative costs of travelling by public and private modes vis-à-vis their relative convenience[a]. Two factors would come into play here, namely the per kilometre cost of travel by public transport compared to that by private modes and second, the convenience and perceived personal benefits from both the modes of travel. The first of these has been dealt with in Chapter 6.

This chapter focuses on issues involved in promoting the use of public transport, that is the convenience and comfort differential perceived in travel by public and private modes. Here the promotion of alternative modes of travel, like luxury buses, should be explored while discouraging private modes. Chartered buses already cater to about 7% of the travel demand in Delhi. In addition, over 40% of all trips in the city are to and from workplace (ORG 1994). It is this segment of travel demand that should be targeted to shift to public transport and intermediate modes of transport.

Quality of service parameters

Table 7.1 lists some of the key parameters for measuring the quality of service. Some of these are discussed in detail subsequently.

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[a] Incidentally, there is a substantial willingness to shift to public transport. In a survey carried out at a congested crossing in Delhi, the ITO crossing, the willingness to shift to public transport was over 19% on all four corridors (TERI 2000 a).

Table 7.1 Parameters for quality of service

Location of bus stop / terminus	▪ Access to the bus transport should be available within a walking distance of 0.5 to 1 km. ▪ Bus stop should have shelter ▪ Display of bus routes passing through that stop ▪ Route-wise arrival timing schedule
Public conveniences	▪ Communication facilities ▪ Drinking water ▪ Rest room ▪ Enquiry counters ▪ Advance ticket sales and reservations ▪ Park and ride facilities
Access to information	▪ Bus network ▪ Rail-road linkages ▪ Scheduled timings ▪ Average time of travel ▪ Fare ▪ Other details like places of importance ▪ Emergency contact number ▪ Grievance redressal procedure, etc.
Reasonable waiting time	▪ High frequency (within 5 minutes during peak hours) ▪ Within 15 minutes during lean hours
Destination boards	▪ Visible, easily readable and well illuminated destination boards at the front, rear and entry point ▪ Route map ▪ Schedule timings ▪ Fare table
Reliable service	▪ Free from breakdowns ▪ Brakes in excellent conditions and smooth ▪ Fairly reasonable speed that traffic could safely allow
Riding comfort	▪ Good suspension system/smooth ride ▪ Low noise level ▪ Clean interiors ▪ Free movement inside the bus ▪ Easy access to and exit from the bus - low floor / steps with deep treads and low rises ▪ Access to physically challenged ▪ Fairly comfortable cushioned seats ▪ While standing, sufficient holding straps within comfortable reach and sufficient holding brackets on the seat edges for children and ladies and vertical support bars ▪ Easy movement inside the bus to alight and request for stop and to secure ticket from the on board machine or conductor
Safety	▪ Well trained drivers ▪ Well maintained roadworthy bus

	▪ Chequered steps steps/floor to add to grip/friction ▪ All safety equipment in order - rear view mirror, doors, windows, brakes; emergency relief equipment - fire-fighting equipment, first aid box with medicines and crew trained to use them.
Good grievance redressal system	▪ Facilities to lodge complaints ▪ Quick responses to complaints ▪ Suggestion box to improve inadequacies, on route layout, on timing, etc. ▪ Public relations and contact programmes.

Punctuality and reliability

Timing and punctuality are twin basic requirements for ensuring quality. Punctuality in turn depends upon the frequency of services planned and the availability of buses. In terms of physical performance, it reflects the fleet utilisation and the rate of breakdowns. It also depends upon the average speed of the traffic, incidents en route, etc. But if a scheduled bus is not operated due a breakdown, problems of overloading, etc emerge.

Punctuality is generally manually monitored at bus terminals in India. Due to concerns regarding such manual supervision, monitoring punctuality using electronic touch probe, radio-frequency technology and GPS has been found to be highly reliable. As mentioned earlier in the report, BMTC is experimenting with all the three methods. This has improved not only punctuality and reliability of the services but also the crew behaviour and accountability. Some of these technological interventions are also cost effective.

Also, providing priority to public transport at intersections and an exclusive right of way on high density corridors and hence reducing the time taken to complete a journey by public transport are other initiatives that make public transport operation more attractive. Other strategies for reducing travel time would include facilitating quicker boarding and alighting of passengers through the use of low floor wide door buses, and off-board ticketing. Similarly, the waiting time for public transport, can be reduced through improved design of passenger information systems like routes and schedules. Frequent delays and breakdowns adversely impact the attractiveness of public transport. This needs to be addressed by paying adequate attention to punctuality and the proper maintenance of the vehicles. Standards of maximum deviation from the scheduled timings and missed services need to be laid down and a system of compensating passengers for any losses they suffer would help in enhancing the attractiveness of public transport.

Access

Easy access to public transport is critical to its acceptance by those who have other choices. Standards for accessibility should be laid down in terms of distance within which public transport access points should be available, for example, 0.5 to 1 km in the inner city areas and 1 to 2 km in outlying areas. Here, a cluster approach in urban planning also makes it easier to provide better public transport coverage, as connecting cluster centres is often adequate to meet the public transport needs. Short, intra-cluster trips can usually be performed by walking, cycling or para-transit. Intra-hub trips could be made by other modes. Another strategy is the development of transit villages. Transit villages are high-density residential or commercial centres close to or on transit stations. They also offer the advantage of easy access to public transport services and thereby have the potential to make public transport usage more popular. The development of such transit villages can be facilitated by sound policies such as permitting a higher floor to area ratio in such areas and suitable incentives under the local municipal laws for land use.

However, it is not always possible to cover all areas with public transport necessitating the use of personal transport. Nevertheless, it is still possible to encourage people to use public transport in the busy commercial centres and restrict the use of personal vehicles to the outlying areas by integrating public and personal transport. Typically this calls for good parking facilities at public transit stations and easy access to public transport from there.

Safety and comfort

Comfort includes the facilities available at the bus stops and terminus, outside and inside the bus and facilities for inter modal transfers, etc. These include amenities to facilitate smooth hassle-free transit. The passenger information system adds to the comfort. Information relating to connectivity within the system network is also important. The use of low floor wide door buses, through off-board ticketing, etc, apart from reducing travel time also would improve commuter comfort.

In terms of safety, the driving license system in India is still far from satisfactory and the traffic conditions in the urban are deteriorating fast, accidents are major concern for commuters road. Though most SRTUs have training facilities for their drivers, the driving skill levels of other road users are very poor, resulting in a high casualty rate. This is also reflected in the poor safety record of private stage carriage (Blueline) buses in Delhi (Table 7.2).

Table 7.2 Number of Accidents in DTC city operation 1997-2000

Particulars	1997-98		1998-99		1999-2000	
	DTC	P.O.	DTC	P.O.	DTC	P.O
Effective km. operated in lakhs	1099.28	567.62	1325.52	1600.93	1221.02	1876.54
No. of fatal accidents	33	37	57	74	40	96
No. of serious accidents	17	-	17	20	10	6
No. of fatalities	33	37	62	79	41	99
Rate of accidents/lakh km.	0.036	0.065	0.049	0.048	0.036	0.053

Measuring service quality

Measuring service quality would imply obtaining details relating to all kinds of transit modes like trips scheduled and operated, safety and crime record, park and ride facilities, route lengths and time table, etc. These data in fact directly reflect the quality of service available by different modes at each place. At present, in India there is no legal or system requirement allowing regulators to elicit information from transit agencies. Another compounding factor is that different authorities under different ministries – Railways, Shipping, Road Transport, Urban Development, Environment, and Finance – act independently without any visible co-ordination. This is further vitiated by duplication of these authorities at Central, State and local government levels.

So far as railways and SRTUs are concerned, fairly reliable data are available whereas not even basic data like bus days operated and passengers carried are available from private sector operating nearly 300 000 buses across the country. Hence, there is an urgent need to make necessary legislative measures to elicit basic operational details as part of permit condition. A suggested format for collating data on such parameters suggested in Annex 7.1.

Annex 7.1

Please e-mail every year by 30th June to:

THE ROAD TRANSPORT REGULATORY AUTHORITY
ANNUAL RETURN FOR THE YEAR ________
(Furnish information covering the entire activities during the year)

Operator ID

1. Vehicle

1.1 Registration No.	1.11 Make	1.12 Model-Year		
1.2 Fuel Used	1.21 Emission Norm	1.22 Last Date of Emission Test		
1.3 Technology	1.31 Air Suspension	1.32 Automatic Transmission	1.33 Retarder	1.34 Low Floor
1.4 Route Operated	1.41 Route Length	1.42 No. of Trips/Day	1.43 Km. Run	

2. Service Quality

2.1 Punctuality Assessment [x]	2.11 Manual	2.12 Touch Probe	2.13 Radio Frequency	2.14 GPS
2.2 Punctuality %				
2.3 Reliability	2.31 Breakdowns	2.32 Trips Lost		
2.4 Safety	2.41 Fatal	2.42 Serious	2.43 Minor	2.44 First Aid Box
	2.45 Fire Fighting			

	Equipment			
2.5 Training	2.51 No. of Drivers	2.52 No. Retrained		
2.6 Public Information System	2.61 Time Table	2.62 Route Map	2.63 Time Schedules	2.64 Stop Indicator
2.7 Accessibility	2.71 Physically Challenged	2.72 Holding Devices	2.73 Pneumatic Doors	
2.8 Fare Collection	2.81 Manual	2.82 AFC	2.83 Contact less	
2.9 Fare Integration	2.91 Other Bus	2.92 Rail	2.93 All Modes	

Please e-mail every month by 10th to:

THE ROAD TRANSPORT REGULATORY AUTHORITY

MOTHLY RETURN FOR THE MONTH OF ________

(Furnish information covering the entire activities during the month)

Operation:

Operator ID	Vehicle ID	Route ID	Fuel Consumed	Km. Run	Passengers Served

	Trips	km	Loss of	Trips	km	Accidents		
Scheduled			Breakdown			F	S	M
Operated			Accident					

Cost

Fuel	Lube oil	Tyres	Spares	Total

Wages	Interest	Insurance	Depreciation	Total

8

Route rationalisation and allocation

Rapid increase in urban agglomerations, increased economic development, and population growth have resulted in increasing mobility demand. Here efficient route and network designs are necessary for any public transport provider to ensure maximum coverage. This chapter identifies some issues is route and network design, and service delivery.

Current practices in network design and route allocation

The Motor Vehicles Act, 1988, spells out the detailed procedure for commencement of a bus service. The award of a permit is to be based on periodic origin-destination studies. The selection criteria is based on the experience and financial stability of the operator. Other criteria considered include availability of workshop facilities at one of the termini of the proposed route, past history as operator in terms of violation of permit conditions etc. Special provisions are made authorising the SRTUs to formulate schemes for routes or for area and to rationalize the services. The model of route planning followed by and large in most urban areas is recommended to be network based and guided by the direction of travel, rather than the destination. This limits the number of routes so as to simplify the planning process.

However, as cities have grown and as the jurisdiction has become fragmented including a number of local bodies within one city, interfacing with multiple authorities and meeting the rapidly growing mobility demand has strained the resources with the SRTUs. Also, ad hoc adjustments in routes due to community and political pressures have increased the problem. Thus, the direction oriented routes have been replaced by a number of stand alone routes have emerged. This has resulted in a dramatic increase in the number of routes. For example, Bangalore has 2500 trips on 1150 routes, Chennai has 428 routes operating nearly 3000 trips and DTC has 805 city and 124 intercity routes operating nearly 5 services in a route on an average. This clearly indicates that the existing routes are all destination oriented. This also has the added problem that it is no longer possible to identify loss making routes from profit making routes as a number of routes overlapp.

Networking models

The fundamental principles that guide network design are the following:

- To ensure that at any bus station the maximum waiting time should not be more than 10 minutes
- A commuter should be able to reach any destination within the city within an assured time limit of 90 minutes with maximum of two transfers
- The walking distance between the bus stop and origin or destination is less than 1 km.

In order to develop the public transport network to meet the above requirements, a huge database based on 'Comprehensive Traffic and Transportation Studies' is necessary. The various network models prevalent in India are described below.

Linear model

Mumbai lends itself to linear networking with branches. The road network has developed in a predominating north-south direction and radial to the central business district. There are a few cross-links with continuity across all radials. Thus the east west direction has relatively few roads. The business centres are concentrated in the south while the residential development has taken place in the north. Since the networking is linear, the traffic flow is mostly unidirectional resulting in empty runs. The route network is built up with feeders connecting suburban railway stations and nearest colonies, routes connecting eastern and western suburbs, where there is no rail link and major suburbs.

Semi-circle model

In Chennai, the road network is semicircle with coastline as the diameter. The city has been growing radially in the north, the west and the south in three layers of semicircles at every 7 km. The center is somewhere in the northeast, where the central business district, the railhead and the bus termini are located forming the hub. The city has grown in segments leaving radial path to link the enclosed semicircle. The road network is ideal for rationalizing the existing bus route system. A study revealed that introduction of circular and radial feeders with one or two transfers could bring enormous amount of relief to the pubic in general in terms of lesser waiting time, faster services and more mobility to the SRTU, a significant improvement in productivity. Except the main linear corridor from south to north and one circular southwest and west east and another mid circular southeast and west east, in which the headway is 3-5 minutes, the rest of the sections suffer from both frequency and adequate connectivity. Circular routes with radial feeders and zonal shuttles could significantly improve the transportation system in Chennai.

Star and hub network

Bangalore is an example for the star and hub networking. Traffic studies have identified 8 linear-spike routes one in each of the 8 directions surrounding the Central Business District (CBD). Bangalore Metropolitan Transport Corporation (BMTC) is reorganizing its routes into the star and hub pattern to improve operational efficiency and speed of the vehicles. The existing routes are being rationalized by formulating direction-oriented schedules with higher and reliable frequency of service. BMTC has initiated a study by consolidating 382 routes with 25 corridors with 15 feeder routes using 830 buses in place of 812, as a first step before finally merging into eight main corridors. The study indicates that the frequency of services in the corridors could be doubled from 6 per hour to 12 per hour. In the feeder routes the frequency is expected to vary between 6 to 3 per hour. This new networking would involve a maximum of two transfers.

Route allocation

As mentioned in Chapter 5, the present system of allocating routes amongst operators is not transparent and there is scope for rent seeking. For this reason, it has been recommended that this exercise should be done by an agency that is insulated from political risks. Such an allocation needs to be done in a fair and equitable manner, not only to ensure adequate coverage on each route but also to ensure a reasonable return to each operator. The international experience reveals that regulatory agencies can realise efficient route allocation through a process of competitive tendering of routes.

Also, after the restructuring process that has been recommended in Chapter 4 is implemented, it would be necessary to allocate these routes between a number of large private operators. If private operations are more efficient that public operations as has been highlighted in Chapter 2 and 3, the private operators would be able to improve the viability of some routes that are currently loss making. For instance, a study in Chennai revealed that only 8% of all SRTU trips (182 out of 2223) earned profit even though all trips covered the variable costs (Table 8.1). With efficient private operations, it is possible that more routes may be viable.

Table 8.1 Cost coverage in Chennai

Component	% of total cost	% of trips
Total	100	8
Interest	95	16
Depreciation	90	27
Taxes	88	31
Materials & labour	85	42
Variable costs	35	100

Nevertheless, once the entire sector is privatised as is envisaged in Phase II, the tendency among the private operators would be to seek only the profitable routes leaving aside the less profitable routes. With near free entry and exit as allowed in the Motor Vehicles Act, 1988, the less profitable routes are likely to be ignored. As described in Chapter 3, this situation can be addressed in the following means:

- Cross subsidisation by assigning a mix of economic and uneconomic routes to each operator as has been done in Hong Kong
- Competitive tenders where the operators bid for the amount of subsidy they would require to run each route as has been done in London.

Conclusion

It is necessary for a public agency to ensure that there is adequate coverage of public transport. At present, there is no systematic exercise for network and route design. Also, urban rail networks develop independently of the bus networks. It is necessary that a periodic assessment of the demand be made, on a scientific basis, over the entire network. This assessment should form the basis for allocation of routes amongst operators and a design of the level of service required.

Also, the present system of allocating routes amongst operators is not scientific and transparent. It is necessary that such an apriori assessment is made at periodic intervals, in a scientific manner, and route permits be given only after such an assessment has been made. Such an allocation needs to be done in a fair and equitable manner, not only to ensure adequate coverage on each route but also to ensure a reasonable return to each operator.

A International experience in restructuring public transport

Buenos Aires

Railways

Prior to 1990, Ferrocarriles Argentinos (FA), a wholly government owned company, operated a national railroad network of about 35,000 km, and employed 92,000 people overtime, the share of intercity passenger declined by 26% and metropolitan passenger by 35%. FA's total revenue was less than the total wage bill. It was losing about $1.4 billion annually. Of these, about $585 million were incurred by the freight services, about $350 million by the intercity passenger services and about $465 million by the metropolitan commuter services. These losses represented a major drain on the treasury. Major reasons for the poor performance were lack of commercial orientation, poor pricing policy and investment plan. FA had more employees than they required and their operational and maintenance practices were outdated. FA did not even have a commercial policy and they were running in uneconomical routes due to union pressure.

In 1990, the government decided to embark on an ambitious privatisation program, with the objective of reducing the financial burden of the railway system. A series of policy decisions adopted over the three years from 1989-1992, resulted in horizontal unbundling and privatization through concessions. They divided the total network into three separate entities: metropolitan commuter rail, freight services and intercity passengers. As part of the restructuring model they have identified seven suburban railway services. A new state-owned company, Ferrocarriles Metropolitanos S.A. (FEMESA), was created to run the suburban passenger services. Most of the intercity passenger services were transferred to the provinces because they were not commercially attractive. Provincial authorities were given the choice between running the passenger service and phasing it down. In the case of freight services, it was divided into 6 sub-networks based on the geographical and gauge width. Each agency was responsible for all the activities related to railroad network. However the state government was the owner of the fixed facilities, including track, stations and the rolling stock. Private parties has to pay the fees for using the infrastructure and the time period were 10 years for metropolitan railways, 20 years for the metro and 30 years for freight railways.

In the case of second method (Concessioning) it was awarded on the basis of lowest subsidy requested by the agency. This is based on the first ten year present value of the annual subsidy flow required to operate the line and net flow of the fee offered to be paid for the use of fixed assets such as track and stations. This was a more transparent method of issuing the contract.

The impact of the above mentioned restructuring as whole implied that the quality of services has improved significantly. The reduction in workers from 92000 to 17000 in 1998 resulted in the government spending about US $400 million per year in subsidies, compared to a total subsidy of around US$1 billion per year earlier. The quality of the services improved as revealed in surveys conducted by independent agencies where about 85% of the users have said that the services have improved since privatisation. From a financial point of view, subsidies are shrinking from US$ 30 in 1995 to US$ 11 in 1998. During the same period the number of passengers has increased from 163 to 217 million.

Buenos aires bus

Bus regulation is divided among three jurisdictional levels. Within the municipality of Buenos Aires, and for services into and out of the municipality, the jurisdiction is national and is implemented by the National Commission for Motor Transport (CoNTA). CoNTA controls about 10 000 of the 15 000 licensed buses in the metropolitan area. Buses operating between municipalities in the province of Buenos Aires are a provincial responsibility, operated by 114 separate route operators. About 1000 buses operating entirely within individual municipalities in the province are purely a municipal responsibility.

Policies on bus licensing are much more liberal in some of the outer municipalities than in the national jurisdiction. Fares for bus services in the national jurisdiction are set by the Secretary of Public Works and Transport, within the Ministry of Economy. Although bus fares for the other jurisdictions are formally within the local jurisdictional competence, they follow the national jurisdiction fares.

Co-ordination

For effective co-ordination of urban transport, a precursor to an autonomous agency was set up under an agreement between the Minister of Economy and the Mayor of Buenos Aires, in 1991. Although a legislation to create a permanent autonomous body (Autoridad del Transporte del Area Metropolitana – ATAM) was passed in the senate, it failed to gain broad political support. Therefore, the precursor to the ATAM (pre ATAM) has developed into a competent planning unit, which performs planning design and assessment functions for metropolitan transport. In late 1996, it was converted into a new unit (TUAMBA – Transporte Urbano del Area Metropolitana de Buenos Aires) with the objective of maintaining it as a core for metropolitan transport planning.

Route associations in buenos aires

Franchises to operate buses in Buenos Aires are only granted to organizations which are legally constituted as companies. The company may be formed, however, by the association of small bus owners. Although vehicles are registered in the name of the company or association (*sociedad*), they are really owned by one or more of the members of the association (*componentes*), who assign them to the association for the purposes of the franchise. Franchises are allocated so that there is competition between associations on routes or sections of route. Of the associations under national jurisdiction 63 percent operate between 26 and 75 buses, and only 9 percent of buses were in associations of more than 150 vehicles, which is considered the limit for manageability. However the number of buses per associate is less than 2 on average, and the number of staff per bus averages less than 3, of which three-quarters are drivers. The route association is legally responsible for providing bus services. However, each owner receives the net revenue generated by his vehicle, and carries out some of the tasks of operation (crew provision, maintenance, fuelling). The association performs the planning functions, such as fixing timetables, and provides other services (garaging, spare parts purchase, etc.) as may be convenient in the circumstances of the particular association. They rotate schedules to share times of low and high demand equitably. Bus purchasing, repair and overhaul, and centralized revenue collection is undertaken by the association in some cases (tight associations) but not in others. Taxes on profits are paid by the owner and not the association. The success of the associations in maintaining good service may be attributed to the fact that they combine a coordinated planning capability with a financial system which makes the net earnings of members dependent both on the general performance of the association vehicles as a whole *and*on the performance of their own particular vehicles.

Each association belongs to a federation which negotiates wage agreements with staff on behalf of members and negotiates fare levels with government. The federations also review applications by associations for new routes or route extensions in order to avoid harm to other associations.

British rail

British Rail had been created in 1948, when Britain's private railroads were nationalised (Preston and Wheelan 1995) (Nash 1997). It provided four main types of services.

- Freight
- Long distance passenger services – inter-city
- Medium distance passenger services - regional
- Commuter rail services, particularly in and around London

Over the years, British Rail's market share declined rapidly in all its services, due to competition from other modes. In the commuter services, however, the decline was comparatively lower as road congestion made auto and bus modes less attractive. Even though the British government has reduced many unprofitable lines and improved rolling stocks in the remaining lines, it has continued to require substantial subsidies. It was the only service sector which was not privatised because of the complexity involved in the process. Finally, in early 1992, a decision was taken to privatise British Rail.

The Railway Act of 1993 laid down the policy framework for its privatisation. The strategy was to separate operations from infrastructure. Infrastructure itself was divided into fixed facilities and vehicles. While the fixed facilities, like track, stations and yards, would be owned and maintained by one company (Railtrack), separate companies would own and maintain the rolling stock. While the freight services were sold to different private companies, passenger services were franchised through competitive bidding.

Such a privatisation strategy called for certain regulatory and monitoring institutions. The following two important offices were set up.

Office of the Rail Regulator

To prevent Railtrack from abusing its potential monopoly power as the sole infrastructure provider, the government created the Office of the Rail Regulator. The Rail Regulator was appointed for a period of five years and would be free from direction from the Secretary, being guided mainly by statutory obligations.

The Rail Regulator had two main instruments for controlling Railtrack and the operating companies. One was the authority to issue a license to each operating company, which specified the operator's general and network obligations. The second was the authority to review the access agreements between the operating companies and Railtrack. These agreements specified not just the access fee to be paid but also the times during which the infrastructure would be available. They also established penalties for violation of the terms of the agreement.

Office of the Franchising Director

The Franchising Director was responsible for administering and supervising the passenger service franchises. The Secretary, whose instructions he was obliged to follow with regard to the desirable level of service and the amount of public subsidy available, appointed him. However, the Franchising Director specified the other details like some of the fares, frequencies and other characteristics of the services required. He was responsible for the invitation of bids, award of franchises, supervision of performance and assessment of the penalties for non-compliance.

The Health and Safety Executive, a government agency responsible for enforcing health and safety standards throughout the British industry, would continue to monitor and enforce existing railway safety laws. It would license train crew, inspect conditions, investigate accidents, and order improvements where needed.

All rail passenger services except for charters and the Eurostar Channel Tunnel services were franchised. To this end, the passenger business has been divided into twenty-five separate components. Until these businesses can be transferred to the private sector, they have become the responsibility of new train operating units (TOUs) formed within BR. The Franchising Director issued a pre-qualification document for the first eight franchises in December 1994. These eight service groups account for over 40 per cent of passenger traffic on British Rail.

Thirty-seven companies expressed interest in these services by the initial deadline in March. As well as management teams, these organisations included bus companies. Other major companies thought to have applied to pre-qualify include British Airways, Sea Containers, Southern Water, and London and continental Railways. OPRAF then issued the invitations to tender for these three services.

Train operating units and the franchised train operating companies have to pay the track access charges to Railtrack. These track access charges have initially been negotiated between the Franchising Director and Railtrack, and have then been modified and approved by the Railway Regulator. In effect, the Franchising Authority will underwrite the access charges, though in later rounds Railtrack will bear some of the risk. TOU/companies have also leased their rolling stock. To this end three rolling stock leasing companies, each owning some 3,500-passenger vehicles, have been formed within British Rail. Passenger train operators will also need access to passenger stations as well as to track and signalling. The leasehold of these stations is vested in Rail track, which will lease out the stations to the services using them. Rail tracks were also considered for selling/leasing major station sites to independent companies.

In principle, a bidder for franchise might bid a positive sum to win the contract to operate the service. However, the level of track charges announced for the franchise groups were such that the Franchise Director is likely to have to pay subsidy for all but one of them. This is still likely to be the case after the Regulator's subsequent reduction in charges for 1995/96. The contract between OPRAF and the franchisee will specify minimum service standards, such as the minimum frequency, punctuality and reliability. In May 1995 the Government and the Franchising Director announced much more general fare controls. From 1996 to 1999 there was no real fare increases on three major ticket types throughout the rail system: these are Saver tickets (one type of cheap fare ticket), standard returns where no Savers are available; and all standard weekly season tickets. From 1999 to 2003 these fares must be reduced by one per cent per annum below the Retail Price Index. In London the average price of a wider range of tickets (all standard seasons, standard singles, unrestricted standard returns and London Travellers) will also be covered by these controls. In addition fare changes in London will also be subject to performance incentives.

An original aim of splitting off infrastructure from operations was to encourage competition on the network, in other words to make the provision of rail services (as opposed to infrastructure) more contestable. To this end, "open access" competition was to be encouraged. However, such competition will be limited in the early days of franchising so as to encourage franchise bids. The limits on open access competition were set out in February 1995.

In 1994, the regulator was introduced and the major task was to revise the level and structure of the access charges in the initial track agreements and the terms and pace at which competition among train operators would be permitted. Regulators have decided to privitize the sizeable parts of British rail were the three rolling stock companies, or ROSCOs that would lease 1100 coaches and locomotives to the TOCs. The ROSCOs would inherit leases ranging from 4 to 10 years with the 25 TOCs, but the TOCs would be under no obligation to renew the leases when they expired or to use ROSCOs for any additional equipment the TOCs required. The three ROSCOs were sold for 1.8 billion pound. The franchises were awarded based on the two criteria, the first and most important was the level of subsidy requested and the second was whether the bidder was promising to provide additional services or investments beyond the minimum required. Normally the franchises were for 7 years, but franchises up to 15 years were offered on several lines where OPRAF desired a higher level of investments than a TOC could amortise in 7 years.

The initial bids were for fewer subsidies than British Rail was providing and as the bidding proceeded the competition became more intense and the savings greater. In the end the 25 TOC were sold to 13 separate companies. Fifteen of the TOCs were sold to bus entrepreneurs or companies that had formed in the privatisation of Britain's local and inter city bus services. Many of the bids showed a fairly dramatic reduction in subsidy over time and some actually promised to pay OPRAF in the later years of the franchise. In the case of freight major operating companies were sold to single bidder.

Rail track's stock was successfully offered to the public in May 1996. The government has agreed to assume approximately 1 billion pounds of railtracks past debt leaving it with only 350 million in short term debt and 236 million in long term bonds. Railtrack apparently assumed an obligation to increase its investment although how much was never clear. The prospectus for railtrack's stock noted the plan for spending 3.5 billion over five years that railtrack's directors projected investment of 4.7 billion over that same period.

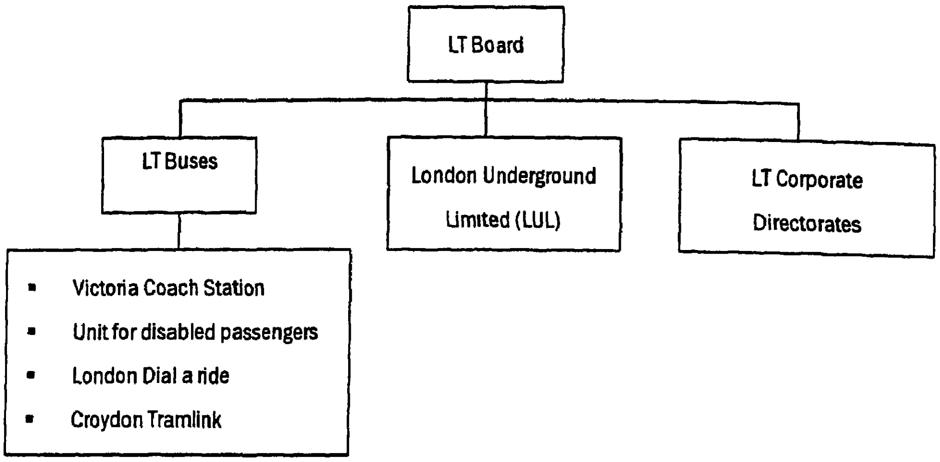
Buses

Buses play a key role in London's economic and social life. Londoners make over 3.5 million trips by bus every working day. Together with the Underground and the Railways, the bus service provides a comprehensive public transport network across London.

The Transport Act of 1980 effectively removed most price control from local bus services and made introduction of new, competing services less difficult than before, but with only moderate impacts.

Co-ordination

Co-ordination of public transport in London is the responsibility of London Transport, which is organised as follows:


LT Board
LT Buses
London Underground Limited (LUL)
LT Corporate Directorates
Victoria Coach Station
Unit for disabled passengers
London Dial a ride
Croydon Tramlink

A regulated, planned network was retained, but a system of competitive tendering was introduced. Initially, this applied mainly to minor routes in suburban areas, which existing independent firms could easily operate, but was subsequently extended to include trunk routes, and high-frequently services in central London (including, from 1992, some of those still operated with conductors). Each route was advertised separately, but in almost all cases the entire schedule has been covered as a single contract (except from some peak school journeys), rather than separating the "commercial" periods of operation as in other parts of Britain.

By April 1993, about 40% of the network had been tendered out in this fashion, operated both by London Buses Ltd (LBL) and other operators, dependent upon success in the tendering process. This proportion rose to about 50% by April 1994. The other half of the bus-km was still operated directly by LBL companies, but on a "negotiated contract" basis from April 1993, rather than a block grant for the whole network.

The separately-tendered services as such in London are operated on a "gross cost" basis, i.e. all revenue accrues to the tendering authority (LT), and the operator is paid for total costs incurred (including capital charges on vehicles, etc.). Hence, the operator does not incur revenue between routes and operators is not required in fine detail: about 70% of bus journeys in London are made on bus passes (a card purchased by the passenger giving unlimited use of the bus network in defined zones for a defined period), Travel cards (covering buses, underground and British Rail Services), or concessionary passes (given to the elderly and disabled) which do not involve cash transactions on the vehicle. A noteworthy feature in London in that, while fares for adults are high compared with other European cities (both in cash and for Travelcards), pensioners and disabled receive free travel, except in the morning peak: this represents about 25% of all bus trips.

In November 1993, the government announced that deregulation in London was not to proceed, but all the existing LBL companies would be privatised. It was also intended that all future contracts (whether with former LBL companies, or other operators) would be on a net cost basis. Subsequently, privatisation of LBL companies was completed in December 1994, but in view of the difficulties encountered in net cost tendering, further route-by-route tendering has been resumed on a gross cost basis for the period to 1997.

Overall, of the routes put out to competitive tendering, about half were retained by LBL companies, the other half passing to other operators. In addition to small private companies, the latter also include regional companies, originally in public sector ownership, operating around Greater London, who were well placed to bid for services within the capital. For some of these, notably Kentish Bus, and London & Country (both now parts of the British Bus Group), the operations within London now represent a large part of their total business. Some of the independent companies have also grown rapidly as a result of gaining service contracts, notably Grey-Green and Capital Citybus, who now operate over 100 vehicles each.

While all the overall performance in London is clearly better than that in the deregulated areas taken as a whole, a number of improvements could be made in the existing system in London, and some tensions reduced. These were considered by working party of the Chartered Institute of Transport, which produced a report in October 1994 (CIT 1994).

Following privatisation of the LBL companies in the Autumn of 1994, all bus operations within London are now performed by private sector companies. However, LT retains a major role, through its responsibilities for service procurement (contracts) networks planning, pricing, passenger information, etc. It has also provided an element of public transport planning expertise otherwise lacking in London since the demise of the Greater London Council – for example, in bus priorities, and interchange design. The bus responsibilities of LT are grouped under a part of the organisation known as "London Transport Buses" (LTB), which has succeeded the role other LBL holding company, and bus planning work undertaken centrally within LT. LT thus retains a major role, both within London, and nationally, since few organisations elsewhere have developed similar expertise in passenger information systems or network planning.

A number of problems arise from the decisions to adopt net cost 0tendering, firstly for the negotiated contract with LBL's subsidiaries in April 1993, and then subsequently as an aim for the whole network in the November 1993 policy statement. While in theory this provides incentives to operators at attract more passengers through better service quality and marketing (since all the extra revenue is retained, within the period of a contract), it creates many practical problems.

The net cost decision was made before sufficiently accurate methods of attributing passenger trips and revenue to individual routes had been determined. Sampling methods are used (such as diaries kept by Travelcard holders) to determine use of services by non-cash fare payers. On-bus checks are also made, and drivers are encouraged to record the boarding of each Travelcard or pass holder on their electronic ticket machines (all passengers must pass the driver, either to pay cash fare, or display their Travelcard/pass). The sampling methods enable to robust estimates of network-wide ridership to be obtained, but over short periods (such as four weeks, the usual accounting period in the bus industry), or for individual operators or routes, they are not very precise. An operator may thus experience considerable fluctuations in allocated revenue due to sampling variations, rather than changes in actual ridership.

Major improvements should arise form the contactless smart card system, now being tested in Harrow, a suburb in north west London. This scheme was introduced in February 1994, including over 100 buses, of several different operators. The pass or Travel card is replaced by a smart card, encoded for each user, which is validated by a reader adjacent to the driver's ticket machine (to check whether the card is valid for the zone boarded, date of use, etc.). This data may then be collected and retrieved from the ticket machine module, as for cash fares (however, no data is obtained on trip length). Should the experiment prove successful, a fleet-wide system could be adopted. This would enable retention of the existing passes and Travelcards, with their marketing and operational benefits, but ensuring much better validation procedures and data collection. Some limited surveys would still be needed to estimate trip length (since fares are related to fare stages or zones covered).

It is not the aim to replace the Travelcard or pass, but to collect better data, and to introduce stored value ticketing for users still paying in cash. The Harrow experiment has now been extended to include a flat fare ticket, which permits interchange within a given period (unlike existing cash fare tickets), with a discount offered vis a vis equivalent cash fares. Subject to such a smart card system proving sufficiently reliable, it could be extended to the whole network during the next few years, so that future net costs contracts could be based on much more accurate revenue allocation.

For the time being, contracts have reverted to the gross cost form. Following period in which little competitive contracting occurred, while the LBL companies were being privatised, the rate of contracting has been increased to about 15% of the network in each year. In this year and the next, contracts will take the gross cost form, but from 1997/8 it is intended that all will be net cost (both for the former LBL companies, and all other bidders, including renewals of existing contracts held by independent companies).

However, even where revenue allocation is sufficiently accurate, the net cost system still causes some problems. Where each route is the subject of a separate contract, and may cases occur of routes with parallel sections, revenue may vary according to shifts between routes. For example, if two routes both run every 20 minutes over a common section, and one is increased to 10 minutes, while the parallel route remains every 20 minutes, the first route will gain an increased proportion of passengers (since passengers board the first bus to arrive), and hence both net contracts would require modifications. The net cost system makes the procedure of modifying existing networks considerably more complex as a result.

Operators can make suggestions arising from their experience for modifications to services, these are subject to LT's approval. To some extent this is unavoidable, due to the duties imposed on LT by the 19984 Act, in which it has a duty of public consultation when routes are changed or introduced. However, greater flexibility may be possible – for example, specifying the exact route, and minimum levels of frequency and/or capacity to be provided in each period of the day or week, leaving the operator to determine the exact schedule offered.

Conclusions

So far as local, urban bus operations are concerned, the evidence suggests that in many cases the main effect of deregulation is to create competition in the form of expanded supply, rather than lower prices. Where this simply duplicates existing services, the outcome is likely to be little if any growth in demand, and hence a fall in average load factors, such that low revenue per bus-kilometer is produced. This is evident in Britain. Although examples have occurred of ridership growth in specific areas (notably due to minibus conversion in smaller towns, and suburbs), there are no cases in developed countries of local bus deregulation producing a nation-wide growth, nor in large cities.

In developing countries, where overcrowding is a serious problem, such increases in supply are clearly welcome. However, in countries where bus loadings are lower and car ownership much higher, service quality appears to be much more critical. While Britain has gained from lower units costs and reduced subsidies, the decline in ridership is most worrying, especially at a time when broader changes in transport and environment policy suggest a greater role for the bus. An approach based on getting improved efficiency and worthwhile innovations from operators – and high quality vehicles – is required.

In the case of express coaching, competition appears to work more effectively. The market is much more price-sensitive than for urban and short-distance travel, stimulating price and quality competition. While express coach travel in Britain has now returned to the level of 1980, this is nonetheless a much more positive outcome than a projection of the previous decline form the mid-1970s, or the experience in local bus markets. However, scope for express service improvement in Britain is curtailed by increasingly restrictive regulation on speed (although the safety rationale for this is unclear), and the proposed banning of coaches from the "outside" (fastest) lane on motorways with three or more lanes in each direction (again, the safety rationale is questionable). Together with the effects of road congestion, the overall average speed of express coach services is thus likely to diminish, reducing the competitive advantage vis a vis rail. However, prospects remain for further growth in direct services to major airports.

In terms of directly following the deregulation policy of Britain, few examples are likely to emerge, given the poor outcome in terms of ridership and loading. However, there is widespread concern about the cost and efficiency levels of bus services in many countries. This is leading to an approach similar to that in London, i.e., retention of co-ordinated network planning and marketing, but competition for service contracts or franchises. This policy has already been adopted in many parts of Sweden, and also in Copenhagen. A recent national policy review in the Netherlands also favours such an approach. There is also scope for introducing UK-styles minibus operations in suburban areas and smaller towns in many other countries, where low frequencies are offered if only full-sized vehicles are used.

Faisalabad[a]

Faisalabad is one of the fastest growing cities of Pakistan. It is a large industrial centre with an estimated population of 1.63 million in 1994. Publicly owned buses were introduced in the early 1980s but they are non-existent today. There was an acute shortage of public transport until recently owing to the failure of the publicly owned services and the regulatory controls imposed on private operators. Passengers were forced to rely upon small, unpopular Suzuki (10 seat vehicles) services or to resort to alternative modes such as expensive autorickshaws, or cycling or walking.

To overcome the limitations of both public and private sectors, a public-private partnership was initiated for the provision of public transport. Various government officials were convinced into creating an NGO that could run the business of public transport in collaboration with the local operators. As a result, the Faisalabad Urban Transport Society (FUTS) was founded on January 19, 1994. The Society has the legal status of an NGO and is registered with the Social Welfare Department of the Punjab Government. The society had a wide range of objectives. These include improvements to urban transport, traffic management, road safety and the environment.

Operation

FUTS operates stage carriage services, comprised entirely of minibuses (15 seats), for the city of Faisalabad. After its formation, the management of FUTS sought the co-operation of the private sector operators and invited them to become members of the society. Operators were initially doubtful and started to join only after repeated requests. Once confidence was established however, membership grew rapidly. The total FUTS fleet as at March 1997 consisted of over 600 vehicles compared to only 28 in March 1994. Originally operators were restricted to the ownership of a single vehicle only, but this condition has now been relaxed.

The operators are required to enter into an agreement under which they make vehicles available to the society. The agreement is valid for a period of one year and is extendable for further terms. It is executed and linked to a specific vehicle, provided that a committee appointed by the Society approves the condition of the vehicle.

The society employs support staff who are responsible for route allocation, supervising operations for the entire fleet, the enforcement of regulations and other administrative duties. The administrator who is head of the support staff is a retired Magistrate. He manages the society's affairs, assigns duties to staff, enters into agreements with operators on behalf of the society, and is empowered to fine operators for violations. Security guards are posted at terminals and other check posts to keep a record of arrivals and departures, issue duty slips, and otherwise assist officials of the society. Mobile supervisors, provided with motorcycles, check and supervise service operation on the various routes. The guards and mobile supervisors are retired from the army and, unlike the traffic police, the entire staff is generally efficient.

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[a] This section is based on Russel et al

The society generates funds through monthly service charges and a welfare fund deposited by the operators, in addition to fines collected for violations. It has constructed six shops (selling spare parts, cigarette, and drinks, etc largely to drivers and operators) which have been rented out to shopkeepers, and it earns revenue from its own filling station. The financial position of the society is very sound. Although it was perceived that in the initial stages the society would need to approach the government for financial assistance, no such need has arisen.

Issue of route permits

The issuance of route permits for road based public transport operation in the city is formally the responsibility of the Regional Transport Authority (RTA) Faisalabad. In theory, the RTA is authorised to define the routes for private sector operation, indicate the type and size of vehicle, and determine the number of permits on specified routes.

In practice, FUTS has taken over the responsibility for the planning, operation and control of public transport services under the 'FUTS flag'. The society specifies the size and type of vehicles. Route permits are allocated in discussion with operators whereby intending operators consult with the society about potential routes, assess passenger demand, and then apply for a 'permit' to the FUTS. The society allows vehicle owners (who must be members of the FUTS) to operate on specified routes under the agreement described above. No maximum number of vehicles per route is specified and routes are allocated to operators on a 'first come first served' basis. Although there is no formal maximum number of permits per route, in practice new entrants have been steered to newer routes where there are less FUTS vehicles operating.

Fares structure

Under section 45 of the Motor Vehicle Ordinance 1965, fares for road based public transport are determined by the Provincial Government. In the case of FUTS, fares have been fixed by the Society, apparently contrary to the prevailing law. The maximum government set fare for stage carriage bus services in urban areas is Rs. 6.25, whereas the full route fare determined for the services operating under FUTS control is set almost double at Rs.12. Moreover students have not been given a concessionary fare on FUTS services, unlike other stage carriage services. The minimum fare fixed at Rs. 2.5 is also double the minimum set for bus services elsewhere in the province. Legally, the NGO is treated as a private institution, which can run bus services and set fares for its own purposes; thus creating a mechanism for circumventing the government fares controls.

Route network

FUTS has defined the entire route network, terminals, and bus stops for its own services. The RTA has been obliged to rubber stamp FUTS decisions. From an initial seven routes FUTS services are now operating on 11 routes, with four new routes started as a result of the popularity of the services. Routes form a network of radials running across the city centre. The RTA previously issued a list of stops for each route, but in practice there were no signs even to indicate the existence of bus stops. FUTS has specified the location of all bus stops and installed signboards with the courtesy of various commercial firms. No shelters are provided as yet but recently the Society has commissioned the design of a bus stop shelter. It has also built a new central terminal, filling station and office building on land obtained on lease.

Safety regulations

All public transport vehicles are required to obtain a motor fitness certificate from the Motor Vehicle Examiner (MVE), which is subsidiary agency of the RTA, after every six months. The vehicles operating under the control of FUTS, by contrast, are examined daily by the FUTS supervisors. Defects are identified and the need to do repairs is pointed out, and is subject to enforcement.

Enforcement

The traffic police have an overall responsibility for all aspects of enforcement, including traffic regulation, motor vehicle inspection, and the checking of documents such as licences. Generally enforcement systems in Pakistan are weak and they are seen to be a source of graft for the traffic police and other regulatory officials. Ineffective controls by the regulatory authorities over urban bus operations lead to numerous abuses by drivers. They include; route deviation, route shortening, irregular operation, delays and traffic accidents, and overloading. In theory no standees are allowed by regulation on stage carriage services, but in practice there is no effective enforcement and operators maximise their revenues by gross overloading.

By contrast, in Faisalabad, FUTS has established its own much more effective system, under which drivers are fined for committing regulatory violations, backed up by the ultimate and real sanction of exclusion from the society. FUTS staff supervise, police and manage the operation of services and ensure that there is no violation of the terms and conditions specified in the FUTS agreement. The traffic police allow this delegation and 'co-operate' in the smooth functioning of enforcement by FUTS because of the authoritative composition of the governing body of the society. The traffic police only intervene when drivers are involved in gross violations.

Fare control

Fares control has been the most crucial factor influencing the level of service provision. FUTS has provided a mechanism to set fares at levels which have allowed operators to make profits and to increase service provision and service standards by passing the usual government controls.

Passengers views about fares obtained in a survey conducted in December, 1996, indicate remarkably little dissatisfaction. 54% of the passengers interviewed were satisfied with the fares. While only 11% were concerned that fares are too high and indicated that they use the FUTS service because an alternative mode was not available on their routes. About 31% passengers were of the opinion that fares are slightly high for longer trips.

Improvements in service

FUTS has been successful in providing more efficient and reliable public transport services in Faisalabad. There is no doubt that the FUTS services are of better quality than those previously operated which have rapidly been transformed. Vehicle quality and reliability in particular have radically improved.

Area coverage of the present FUTS network is good in the central area but some areas elsewhere in the city are inadequately served. There are several reasons for this. In some areas the road conditions are unsuitable for the operation of minibuses. In addition the society lacks sufficient expertise to design an entire route network for the city on the basis of well-defined criteria and it would benefit from appropriate staff training.

Improvements in traffic management/flows

The very attractiveness of FUTS services has resulted in other indirect improvements. Autorickshaws and their drivers are considered to be major contributions to pollution and traffic chaos in urban areas of Pakistan. The use of rickshaws has declined because FUTS services have attracted rickshaw-riders. The 1996 surveys reported that 12 per cent of the surveyed FUTS passengers were using rickshaws prior to FUTS operation. They also revealed that there had been a decline in the income of rickshaw soperators in the range of 20-30 per cent and NTRC (1996) reports a 25 per cent reduction in their incomes after the introduction of FUTS services. As a result, RTA data shows that about 1000 rickshaws have been withdrawn from the city. Similarly, the elimination of 735 Suzukis is reported by the RTA offcials. With this decline in number of equipped traffic police, overall traffic conditions in the city have somewhat improved. Discussions with shopkeepers, pedestrians, drivers and traffic police all confirmed improvements.

Sustainability

The success of the FUTS itself is now so well established that it seems unlikely that the gains made can be reversed through any clawing back into the control of the government bureaucracy. Pressures still remain however from the ambivalent position of the RTA and its Secretary, and there are grey areas as to the legal status of the NGO's operations where clarification would help to ensure sustainability. The sustainability of FUTS success, however, depends not just on retaining its independent ability to set fare levels, but on its use of this ability to ensure that fares are maintained at realistic levels through a regular review process. Only then will further investment and quality improvements be possible.

Conclusions

The new form of regulation in Faisalabad utilizing NGO status has proved far more effective and promoted major improvements in services. Government agencies have failed to achieve regulatory objectives to the inefficiency and corruption of the government's own bureaucratic procedures. Yet the same chief government officials have been able to improve the quality of public transport by regulation through the NGO.

Real improvements in the quality of services have been achieved in conditions which are financially attractive to operators. The number of FUTS vehicles has grown rapidly and the society is offering greater capacity and a better quality service to passengers at realistic fares. Every passenger is assured a seat, stoppages are at designated stops, and there is strict adherence to specified routes although services still lack the support of effective traffic management measures. FUTS has clearly demonstrated that there is a demand for higher quality services at higher fares in Pakistan.

The FUTS experience demonstrates that private operators in Pakistan are willing to operate in an effectively regulated environment. This is one in which they are an integral part of the process and are consulted at each stage of planning and decision making, within a fair system with no discrimination between operators and one which allows them to generate a reasonable return on their investments.

A key to the success of FUTS is that it provides a forum for open decision making in discussion with operators and other interested parties, with top officials freed from the constraints of their own government systems. The main specific factors responsible for this success are reasonable fares and the strict enforcement of rules by the support staff of the FUTS. The forum has promoted more flexible decision making and a learning process for both officials and operators.

The FUTS provides a successful regulatory model for authorities elsewhere in Pakistan to follow. The NGO has provided an effective mechanism through which to circumvent institutional deficiencies of government bureaucracies. This in turn could eventually help to prompt wider reforms in regulatory procedures within the bureaucracies themselves.

Sri Lanka[a]

The first recorded bus service in Sri Lanka was that provided in 1907 by T W Collert who operated a combined goods/passenger service from Colombo to Chilaw. This service developed into Sri Lanka's first bus company, the Ceylon Motor Transit Company. Its inauguration was soon followed by the first government intervention in bus services, the Vehicle Ordinance Act of 1916.

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[a] This section is based on Roth et al

Until 1942 buses were operated with minimal regulation under conditions of intense competition. The situation was similar to that in Britain, Belgium and many other countries where individual entrepreneurs purchased a vehicle, sometimes an aged lorry, converted it for passenger carriage and operated a route with promising symptoms. As in any business, success of any innovator entices competitors until oversupply reduces the profit margins of all, as indeed is the reported outcome in may British towns today. In Sri Lanka in the twenties and thirties this led to legendary battles on the road similar in style, though not in scope, to the railroad rivalry in Sri Lanka the more enterprising or the more aggressive bought up the timid and enlarged their fleets.

As part of this development the typical successful operator developed the practice of not leaving a terminal without full loading, and always retaining a bus at the terminal (until arrival of his next bus) so as to enable each potential customer to be enticed into his bus rather than his rival's. This particular practice, prevalent elsewhere at this stage of development in many countries, has had a profound influence on bus operating philosophies ever since. What led to government regulation, however, was not this form of asset usage inefficiency but the strife, and sometimes consequent accidents, and the public agitation which emerged.

In 1942, in reaction against what many considered to be destructive competition among 2,000 bus owners, the Government of Sri Lanka (GoSL) induced the operators to amalgamate into 85 regulated companies, each of which was given a territorial monopoly. Each territory consisted of linear corridors with branches penetrating the interstices between corridors. Colombo had eight such radially oriented companies, three companies operating short circumferential routes linking the radials and two other small companies in the outer suburbs. Individual operators surrendered their bus to the companies and received shares. The largest fleet owner joining each company naturally dominated the companies. This system was easier to regulate but became unsatisfactory later.

In their own interests, these monopoly companies ought to have striven to maximise their asset-utilisation, efficiency and profits, but they did not do so. With few exceptions, bus utilisation was less that 100 miles per bus per day with correspondingly low workforce productivity. Their early profits dwindled in the 1950s partly because of this inefficiency and partly due to withdrawal of surpluses to invest in plantations and palatial residences. This very withdrawal led to lack of fleet enhancement to meet growing demand and the public agitation which branded the operators as "bus barons", analogous in title indeed to the American "Railroad Barons".

In 1958, following intense consumer and media pressure, bus services were nationalised and placed under one organisation, the newly formed Ceylon Transport Board (CTB). The CTB quickly improved transport services, but later their quality declined as inflation forced costs up and politics kept fares down and denied funds for fleet replacement and expansion.

The CTB commenced operation on 1st January 1958. Among the management and operation matters taken up by the CTB from the start were:

(a) scientific scheduling
(b) linking bus routes across towns
(c) route replanning
(d) minimising terminal stand time
(e) optimising bus utilisation
(f) recording relevant statistics
(g) training schemes for all levels
(h) research (mechanical and operational)

However the CTB ran into great difficulty and disfavour of public and media after 1975 due to the following, among other factors:

(a) some precipitate trade union actions
(b) growing complacency of management
(c) political intervention of non-policy variety
(d) an upsurge in demand (17% in 1978/79) with which it could not cope without funds to increase the fleet.
(e) reluctant government support.

Regional transport boards

In 1978 services were decentralised by the formation of nine Regional Transport Boards (RTBs), with the central agency, re-named the Sri Lanka Central Transport Board (SLCTB), having a co-ordinating role. It was also responsible for procurement and for major equipment overhaul. The Chairmen of the RTBs (all appointed by the GOSL) constituted the majority on the SLCTB governing board. However, the style and spirit of the CTB management and operations did not undergo significant change, nor did service deficiency and public discontent. The regional boards, with rising costs, ageing over-stretched fleets and pegged fares, had great difficulty in maintaining their equipment to meet public demand. For this reason, and because of its ideological leanings, instead of injecting funds to increase the RTB fleets and meet the fare level deficiency, in 1979 the government broke the regional monopolies by allowing private operators to enter the field and provide service, initially to complement and later to compete with the RTBs.

The overwhelming majority of those responding to the government invitation were individual entrepreneurs who acquired one bus each. The availability of reconditioned Japanese 29 seaters encouraged this trend. The importers of these vehicles, and later second-hand dealers and brokers, reaped substantial harvests. Just a few tour bus operators joined in with modest fleets. Only one reputable mercantile company entered the field but retired after a month.

The resultant fleet grew from an initial 2000 vehicles to approximately 12 000, of which 95% of the owners had only one bus. This multi-ownership feature dictated the operating practices because for such owners the cost centre was a single bus.

The cost-center factor leads to the following practices:

(a) Not departing the terminus until the bus is full;
(b) Buses wait their turn at the terminus;
(c) Racing during peaks to reach key demand points ahead of rivals;
(d) Hanging back at key points during off-peaks to entice passengers who would otherwise take a following bus;
(e) Stopping between authorised stops, sometimes in mid-road to pick-up passenger who hail;
(f) Starting a few minutes ahead of a government bus;
(g) Conniving with government bus crews to divert passenger;
(h) Shouting out their destinations at bus-stops;
(i) Congregating on popular routes and popular times where the symptoms of demand are seen, thereby enlarging the catchment area of such routes and diminishing the demand on parallel routes.

Many of these practices can be seen in other cities which encourage one-bus owners, and are recorded in researched and other histories of early days in Europe. Similarities can be observed in deregulated Britain today.

Bus owners obtain individual operating permits for their buses. Unlike small operators in other countries, Sri Lanka operators do not generally work in route associations. This tendency was strengthened by a 1991 announcement by the National Transport Commission abolishing many of the associations that then existed, owing to irregularities found in some of them. Fares were theoretically self-set by the operators, but largely based on RTB (and later Peoplised) fares, and increases were restrained by threats of permit cancellation. Services within provinces are regulated by provincial transport authorities, and inter-provincial services by the National Transport Commission. The regulatory authorities recommend routes and often despatch buses from terminals. Thus many of the private bus operations are effectively directed by public sector officials. A system of district private bus associations regulated by Government broke down because of alleged corruption by elected and employed association officials.

The "peoplised" bus companies

The RTBs could not compete on equal terms with private operators. They could not, for example, stop at unauthorised places and could not advance their timings ahead of the private operator. Hence, their deficits increased and government decided to transfer all depots to the workforce. Following the advice of consultants, it decided to wind down the Sri Lanka Central Transport Board and the Regional Transport Boards and to replace them by independent bus companies based on depots. As the GOSL was also interested in encouraging worker shareholding, it adopted the unique Sri Lanka solution of giving half of the shares of each new bus company to its workers. The rest of the shares were retained by the GOSL for subsequent sale to private interest. As the process was not exactly privatisation, it was decided to call this transformation "Peoplisation". The Peoplisation process started in 1989, and by 1994 all the depots (except those in the northern conflict areas) have been transformed into 93 operating companies at a cost of Rs. 4.8 billion. However, land and buildings were excluded from the process and remain in the hands of the Government.

Santiago de chile

In the course of the last 20 years bus services in Santiago have gone from being strictly regulated in the 1970's, to being completely unregulated in the 1980's, and allocated by competitive tenders.

Prior to deregulation, services were provided by: approximately 700 large buses operated by the public sector company, Empresade Transporters colectivos del Estado (ETC), 3000 private taxibuses (capacity: 78), 1500 shared taxis. The State controlled fare, route allocation, frequencies and bus imports. With a Government policy of withdrawing subsides and relaxed entry to the market, ETC, facing both losses and increased competition, was unable to sustain operations and was closed down in 1981.

Microbuses and taxibuses are mostly individually owned. Owners are organized into associations that exercise a high degree of monopolistic control over bus operations. The shared taxi market is far more competitive with individual owners exercising much more freedom in their operations.

Controls on both bus and taxi services were progressively reduced from 1979 and by 1983 services were completely deregulated. In the first ten years of deregulation the fleet of microbuses increased by 93% and taxibuses by a massive 135%. There was also a very substantial increase in supply has lead to improvements in frequencies and reduced overcrowidng . However, in the same period, because of alleged price fixing, there was a marked increase in fares: 158% on microbuses and 87% on taxibuses in real terms. The fares for shared taxis, on the other hand, showed comparatively little change. This is because unfettered competition has led the 40,000 taxi operators to seek ways to reduce costs and keep fares down.

Another adverse effect of deregulation in Santiago has been very severe pollution and congestion. This has mainly been caused by the excessive number and excessive age of buses and shared taxis plying busy routes in the city centre.

In 1992, to overcome the drawbacks of complete deregulation, in particular collusion Government introduced a system of licensing operators and allocating routes by competitive tenders. This is still in effect. Selection criteria are based on the age, capacity and qualilty of vehicles the fares to be charged, the fare collection system, and the terminal arrangements. The period of allocation is three to five years.

The effect of these arrangements has been a substantial reduction in the number of buses operating in the city (a reduction of approximately 35%) and a lessening of congestion in the main streets. There has also been a reduction in fares.

The proposal to introduce competitive tenders received a hostile reception from bus operators and caused a bus strike. It was only after lengthy negotiations that the arrangements could be introduced. To ease the process, many of the older buses that became surplus because of this exercise, were bought up by the Government. It is understood that some have been diverted to rural areas.

Whether or not initial improvements can be sustained, will, no doubt, depend on satisfactory administration of the system to ensure compliance with the authorities are able to monitor services deal with any infringements,and exercise fairness of the retendering procedure, will be very important for success.

Sydney[a]

The regulatory reforms to the bus and train sectors in New South Wales briefly comprise of:

- A new Passenger Transport Act of 1990, which facilitated the provision of bus services on a performance contract basis, granting local monopoly in exchange for delivery or betterment of minimum service levels, maximum fare scales and other criteria. The first round of contracts was for five-year duration. Although the regulations apply uniformly to all bus operators, in practice those provided by the government-owned State Transit Authority enjoy more channels of support than do their privately owned counterparts.
- The State Rail Authority has been broken up, with its constituent operating units (City Rail, Country link) separated from the infrastructure owners (which has become the Rail Access Corporation) and maintainers (which has become the Railway Services Authority, and will compete with the private sector for its business).

Adelaide, the capital city of South Australia, is a low-density city with a population of 1.1 million people living in a metropolitan area some 80 km north-south and an average of about 15 km eastwest. Population growth in very low (0.4%), car ownership is high (0.53 cars/person), and the road system is relatively uncongested. Travel by public transport declined substantially, from 240 journeys per capita in 1950 to 90 journeys per capita in 1970 and 42 at present. Bus services currently account for about 80% of public transport trips, carrying about 47 million passengers per annum using a fleet of about 760 buses in a service area of 880 square kilometres. Public transport's market share is about 20% of travel to the central business district, and about 5% for all passenger trips in Adelaide.

A feature of Adelaide's public transport system is the 12 km Northeast O-Bahn, the largest full-scale operational guided busway in the world. The system carries 20,000 passengers per weekday on the busway, with about 108 buses being used for services on the busway and in its service area (Bray and Scrafton 2000).

Until 1995, all public transport services in Adelaide were operated by the State Transport Authority (STA), a Government organisation. This organisation had been formed in 1975 to take over bus and tram services from the

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[a] This section is based on Kilsby

Government-owned Municipal Tramways Trust, suburban train services from the Government-owned South Australian Railways, and bus services from a number of private companies then operating in the suburban area of Adelaide. Adelaide's public transport services are heavily subsidised. The multi-modal integrated fare system has been modified over time and is now not far removed from being a flat-fare structure, with a lower fare for short distance travel and during the inter-peak period. The average fare per journey is currently about $1.151 and farebox revenue in 1997/98 was about 28% of public transport operating costs, and 18% of the total cost of providing public transport, including the opportunity cost of capital (Bray and Wallis 1999).

Adelaide's public transport had been under central government control for just under twenty years when the Liberals came to power. In 1974 a Labour government had combined the state-owned rail, tram and bus public transport operations as well as the private bus operations which operated on the fringes of the city. It had earlier rejected a freeway-based solution to Adelaide's growing congestion problems and had taken the public transport option instead. It was thought that a well co-ordinated and well-funded public transport service would take the pressure off the existing road capacity, as well as meet other environmental and social justice ends.

The State Transport Authority was established to achieve this. Generously funded, it modernised the bus fleet, established new depots and introduced a single, integrated ticketing system, whereby passengers could transfer from one mode to another on a single ticket. Fares were kept constant, which in a time of high inflation meant an actual decline in price.

However, with a change of Government in 1993, a detailed transport policy was released, which, among other things, provided that Adelaide's public transport system would be put to tender. A draft bill was released to accomplish this. Within six months the bill had become the Passenger Transport Act and by 1 July 1994 a Passenger Transport Board was in place. Its responsibility was to both regulating private commercial transport and to fund, by means of contract the subsidised services. The existing government operator, the State Transport Authority was shorn of its policy functions and renamed TransAdelaide.

The new liberal State Government elected in December 1993 introduced major reforms in passenger transport policy, through the Passenger Transport Act 1994. This legislation:

- created the Passenger Transport Board (PTB) to fund, plan, commission and regulate passenger transport in South Australia;

- converted the former STA into a new statutory operating body, TransAdelaide (TA), relieved of policy functions but not corporatised (which has happened since);
- required all regular land passenger services (ie. to a fixed route or timetable) in the State, covering bus, tram and train, to be operated under service contracts with the PTB; and
- required continuation of a common, multi-modal fare structure across the Adelaide metropolitan area.

The former STA was thus abolished and its activities divided between the PTB and TA. Over time, all Government assets used by private contractors (including the Northeast O-Bahn, bus depots, and buses) have been transferred to Transport SA, a Government department whose primary function is to provide and manage the road system in South Australia, but which had appropriate skills in asset management.

The Government's policy was to progressively introduce competitive tendering for the provision of public transport services, starting with bus services. Other features of significance in the Act were:

- maximum term of five years for any service contract
- maximum limit of 100 vehicles for any single contract
- phase-in provision to guarantee TA the opportunity to control at least 50% of services in the period up to March 1997.

These latter two provisions resulted from political compromises designed to provide some short-term protection for TA, to minimise the danger of any one operator gaining a monopoly position, and to give smaller operators the chance to compete for the provision of services.

Currently all passenger transport services in Adelaide are administered by the Passenger Transport Board, which has responsibility for integrated services, fares and ticketing. The PTB also handles complaints and shares in the marketing of the service as a whole besides serving the minister in policy matters. TransAdelaide, until April 2000 was operating majority of services, under contract to the PTB, which funded and controlled the integrated ticketing system. In 1996/7, in response to declining patronage and increasing subsidies, six bus services were tendered in two rounds. Contracts were on a gross cost basis with incentives provided for increase in patronage and redesign. The duration of contracts was for three years. In the tendering process TransAdelaide won three contracts, and one more contract was later taken up by it as a subsidiary. The competitive tendering of contracts was then halted and the remaining 10 areas were contracted to TransAdelaide through negotiation. The benefits of this process have been:

- TransAdelaide's monopoly (old STA) challenged. New operators introduced. All operators working to performance agreements with the PTB – with financial incentives to grow their business, including patronage.
- Customer service focus established as an overriding objective across the public transport network.
- Innovative services introduced – including 44 new services, more frequent services on the O-Bahn and the City Free.
- Patronage freefall stemmed and stabilised.
- Savings in taxpayer funded operating subsidies (compared to a no policy change base) of over $59 million.

In the year 1998 one legislative amendment and one act was passed to reform the transport sector. These were respectively,

- amendments to the Passenger Transport Act (supported by ALL Parties) which provided that the PTB must seek to avoid "a monopoly", in awarding contracts, and removed the requirement that no contract operator could have more than 100 buses in their fleet.
- Passing of the TransAdelaide (Corporate Structure) Act which retained TransAdelaide as a publicly funded Government owned enterprise, but restructured - with a new Board, commercial charter and business units.

In 1999-2000 third round of competitive tendering was carried out. The changes made in the terms of the contract in third round were:

- bus contract areas reduced to seven (previously 14) and contract terms extended to five years, with an option to renew for five years depending on performance and price (previously an average of three years).
- on 1998/99 prices, the seven contract areas on offer are equal to an investment of $1.3 billion over ten years.
- to assess bids, the PTB established an independent Proposal Evaluation committee was set up.

The expressions of interest were invited in February 1999, the PTB and 24 additional EOI were received (in addition to TA, Serco and Hills Transit). Finally in September 1999, 87 bids were submitted by 16 companies or consortia.

In the month of January 2000, the Passenger Transport Board determined the successful tenders for the delivery of Adelaide's metropolitan bus services to the year 2010. Amongst the winner of the contracts TransAdelaide did not feature. The winners of the contract are experienced bus operators. The contract terms are five (5) years, with a five (5) year extension option dependent on satisfactory performance and agreement on price. The contract winners commenced their new service responsibilities from April, 2000. The new operators have agreed to bring in improvements in quality to improve patronage. Some of the service improvements they have agreed to be:

- extra trips, weekend services and guaranteed accessible services
- Expanded "joint" bus and taxi services – particularly after dark
- Passenger loyalty programs
- Increased security at interchanges and on buses
- More timetable and route information at bus stops and on vehicles
- "Through-running" of services both east/west and north/south so passengers will not need to change buses in the City – and less buses will be left idling in City streets.

The financial benefits of the third tendering process would be that all of the service improvements will be gained at a reduced contract cost. At least $7 million a year ($70 million plus over 10 years) will be cut from the taxpayer-funded operating subsidy after taking account of the whole of Government costs. These savings will enable the Government to find the necessary funds to invest in the future of public transport in South Australia through:

- greater safety and security measures
- more frequent services
- improved regional passenger services
- infrastructure

The Passenger Transport Board is now responsible for the contracting of public transport. It also runs the ticketing and passenger transport information systems and it handles complaints and shares in the marketing of the service as a whole. It serves the minister in policy matters.

The Adelaide experience provides clear evidence of the effectiveness of competitive tendering in reducing the gross costs (and public subsidy levels) of providing a given level of public transport service. This has occurred in the context of the opening up to competition of services previously provided by a Government operator in a monopoly environment, not subject to either actual competition or the threat of it.

The cost savings have been achieved with no deterioration in service quality. Indeed the indications are that service quality can be enhanced, the service better oriented to customer needs, and hence patronage increased.
In Adelaide, the unit cost savings associated with the whole CTC process (since 1994) are estimated at 38% of the previous gross cost of providing services. This is consistent with evidence from a number of other similar experiences internationally where savings in the order of 30% have been reported; and it is consistent with previous studies of cost differences between TA (and other public operators) and efficient private operators in Australia. However, one of the main lessons of the Adelaide experience is that the success of CTC is not guaranteed. It is dependent on 'getting it right' in terms of system design. Two key principles have emerged as being crucial in this regard:

- The importance of designing the CTC system consistent with government objectives for the public transport system as a whole, while recognising that CTC cannot achieve all objectives for public transport. Its main contribution is likely to be first to technical efficiency objectives and secondly to allocative efficiency objectives.
- The importance of encouraging a competitive supplier market, that is sufficient potential suppliers that are likely to submit bids of high quality at competitive (efficient) prices. The prerequisite to achieving this is understanding the motivations and factors that influence potential suppliers.

In Adelaide, arguably, insufficient attention was paid to this second principle in the Stage 1. The result was relatively few bids, in some cases not very keenly priced. Stage 2 involved an extensive review of the whole CTC process, including market research among potential suppliers, followed by system redesign giving greater weight to supplier market considerations. The success of the Stage 2 changes is exemplified by the number and quality of the bids received, the further substantial cost savings achieved, and the positive indications to date in terms of service enhancements, service quality and patronage trends.

Particularly important features of the Stage 2 CTC system that influenced the supplier market response and the overall success of the process included,

- contract duration
- contract size
- 'big bang' approach
- tighter specification of initial requirements, especially in relation to service levels

- sharing of risk and responsibilities in relation to service development and service changes (and the associated funding formula)
- simpler, more clearly presented, RFP and contract documentation
- less onerous contract provisions (eg guarantees) and
- adoption of a 'partnering' approach

Kingston, Jamaica

At one time bus services in Kingston were run by a private company, the Jamaica Omnibus Service (JOS) a subsidiary of the British Electric Traction Company. JOS, which had operated successfully under private ownership for twenty years, found it impossible to cope with a growing obligation to operate longer routes and to serve areas with thin traffic at unprofitable fares regulated by the Government. Productivity then dropped and costs rose, to the extent that by 1983 the service was costing the Government leased the assets of the service to the private sector to reduce costs and improve services.

The privatisation process involved the bus routes in the metropolitan area being being divided into 10 packages with franchisee of each package paying an annual fee. In turn the franchisees sub-let the routes in their packages to individual minibus drivers. This arrangement, with largely uncoordinated bus drivers, coupled with fares regulated at uneconomic levels, led to yet a further deterioration in both the quantity and quality of bus services in the city.

In an effort to rectify the situation, the Government commisioned consultants to undertake a major transport study financed by the World Bank. As a result, a new system was proposed. This was to include the establishment of five exclusive franchises with some overlapping in the downtown area, a more robust and effective regulatory framework, and fares set at commercial levels. The franchisees were required to be the owners and operators of the buses, to run to declared schedules and vehicle allocations to routes, and to maintain specified standards of quality. The franchisees were required to pay a fee and provide a performance bond to which penalties for franchises made provision for fares to be reviewed and revised to allow continued commercial viability.

At the time bids were invited for the new franchises, no decision had been made on fare levels. Instead, potential franchises were asked to include in their bids the level of fares needed to meet the franchise service requirements. In the event, few, if any bidders were up to the standards required. Nevertheless, new franchises were let, but without a new fare table. To overcome the obvious difficulties this caused, a system of temporary subsidies was introduced pending the problem over fares being resolved. Also, the requirement to provide a performance bond was dropped.

As a result, the expectations of the new arrangements have only partly been realised. Operators find the returns including the subsidies insufficient to comply with franchise conditions or to invest in expansion to meet demands. On the other hand the authorities find it difficult to increase fares without being able to show any improvements to service quality and quantity. Similar to the situation in Delhi.

Clearly the local private sector is not yet sufficiently developed to cope with the scale and standard of services or the investment required. With uncertain financial arrangements and concerns about political intervention, the franchises are unlikely to undertakings. The financial and political risks would certainly put off foreign operators who are showing interest in opportunities in developing countries.

Thus, for the desired improvements to be achieved, there would seem to be a need for the local operators to receive some initial financial or technical support with the acquisition of appropriate vehicles and the management of services. There is also a need for firm financial arrangements to be needs to be rationalised with consideration given to introducing compensation to operators for providing socially desirable concessionary travel (e.g. students, elderly and handicapped persons etc).

Provided there is competition between operators, the authorities in Jamaica should not fear that deregulation of fares will result in excessive increases.

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